

## CHAPTER II

### TWENTY-SECOND GENERAL ASSEMBLY

#### First Session

held in the Prins Willem-Alexanderzaal  
1994 August 17, 16.30  
Acad. A.A. Boyarchuk, President, in the Chair

#### 1. Formal Opening by Acad. A.A. Boyarchuk, President of the International Astronomical Union

*Dear Members of the IAU, Dear Invited Participants and Guests,*

*After the Inaugural Ceremony we start the first session of the General Assembly.*

*The General Assembly of the IAU consists of two parts: a scientific one and an administrative one. Joint meetings, joint discussions, and separate meetings of commissions form the scientific part of the General Assembly. The administrative part consists of the commission business meetings, the meeting of selected committees and two sessions of National Representatives of Adhering Countries to the IAU and IAU Members.*

*This is the first administrative session. Since, according to the IAU statutes, its activity is ruled by the General Assemblies, we think that we are supposed to present a report to the National Representatives and the IAU Members on our work for the past three years.*

*We should also announce National Representatives, Representatives to the Nominating and Finance Committees as well as members of the Resolutions Committee which will be working between the two administrative sessions.*

*I would like to inform you that due to the disintegration of the USSR and Czechoslovakia the number of Adhering Countries has increased by 5 and now the IAU is composed of 58 countries, 4 being Associate Members. As in preceding years, the financial problem remains most important in the IAU administrative activity. Arranging scientific meetings and correspondence are getting more expensive. We have minimized the expenses of administrative body and tried to allocate more money to hold scientific meetings.*

*Many organisations, both governmental and private, gave significant contributions to the General Assembly as well as the symposia.*

*During the past three years many important events have occurred in the astronomical life. The unprecedented operation of supplying the Hubble telescope with additional optics was carried out. It allowed to obtain diffraction-limited images and a number of discoveries have been made with the help of this telescope. I believe that they will be widely discussed at scientific meetings during the Assembly. A gamma-ray observatory was launched. Observations with the 10-m Keck telescope, the world's largest one, began. The basic principles of the New Technology Telescope have been generally recognized. We all have witnessed how the Comet Shoemaker-Levy hit Jupiter. I suppose there are numerous scientific results that should be discussed during this Assembly.*

*A new format of the General Assembly and restructuring of commissions are the most important points in administrative aspect.*

*The previous Assemblies were accompanied by a cluster of symposia which were held in neighbouring cities and which were very close in time with General Assemblies. It was supposed that it made it easier for participants of symposia to take part in General Assemblies. But in fact it was not like this. Not so many scientists could come to General Assemblies. This time we have decided to hold all symposia before and after the General Assembly in the same building. I think that at the second session we'll be able to discuss advantages of the new General Assembly format.*

*The second important problem is the restructuring of commissions. The present commissions are very different in both the number of their members and the size of the field of astronomy they cover. The majority of commissions consider that it is a good time to reorganise them. But there exists a problem of the uniformity of the restructuring approach. This problem will be in focus at the meeting of Commission Presidents.*

*Thus, we have a very busy schedule of the General Assembly, and I hope it will be a complete success.*

*I would like to point out that for some reasons the former IAU Presidents Prof. V. Ambartsumian and Prof. R. Hanbury Brown, and former General Secretaries Prof. G. Contopoulos and Dr. L. Perek could not come to the General Assembly. I propose to send them telegrams.*

*I'm happy to greet all former IAU officials Prof. A. Blaauw, Prof. C. de Jager, Prof. E. Muller, Prof. J. Sahade, Prof. J.-P. Swings, Prof. P. Wayman and Prof. R. West, who worked so much for the Union as Presidents or General Secretaries.*

*I am also happy to greet all official representatives of the Sister Unions and all related Organisations.*

*Let's start with the First Session of the General Assembly.*

## **2. Appointment of Official Interpreters**

The General Secretary announced that R. Cayrel (English-French) and J. Rountree (French-English) had agreed to serve as Official Interpreters.

## **3. Report of the Executive Committee 1991-1994**

The President invited the General Secretary to present the Report of the Executive Committee 1991-1994. The report covers the period 1991 August-1994 August 15. The General Secretary summarized the Report highlighting the following points (The extensive report of the Executive Committee 1991-1994 has been published as section 1.2 pp. 1-17 of Information Bulletin 74 and appears in full in Chapter IV pp. 99-118 of these Transactions).

The General Secretary is pleased to report that amongst the states of the former Soviet Union, the Academies of Sciences of Estonia, Russia, Lithuania, Ukraine, Tajikistan & Armenia have become national members of the IAU whereas the Academies of Sciences of Azerbaijan, Georgia, Kazakhstan, and Uzbekistan have expressed their interest to adhere to the IAU and are investigating means for solving their financial problems regarding the payment of the dues to the Union. In 1993, the states of the former Czechoslovakia have also become national members of the IAU as Czech and Slovak Republics. Rumania, whose adherence had been terminated by decision of the XXIst General Assembly has accepted the proposed associate status.

At the time of this General Assembly, 58 countries adhere to the IAU, 57 with full status and 4 with associate status. 760 new individual members were admitted to the Union at the XX1st General Assembly. The total number of individual members as of December 31, 1991 was 7301. As of May 31, 1994, this number was 7202. At the same date, there were 202 consultants.

A proposal for Restructuring the IAU Commissions and Working Groups has been discussed at the September 1992 meeting of the Executive Committee, and the corresponding draft on this restructuring has been sent to all the IAU Officials for discussion and comments. The comments on the proposal on Restructuring the Commissions and Working Groups of the Union from the Commission Presidents and Vice-Presidents, the Adhering Organisations and individual members have been examined at the June 1993 meeting of the Executive Committee. A revised draft of this proposal has been sent to the Commission Presidents and Vice-Presidents for preparation of a general discussion on the restructuring at the XXIIInd IAU General Assembly.

The exchange of astronomers scheme, under Commission 38, has distributed twenty one grants.

Two International Schools for Young Astronomers (ISYAs) have been held (in 1992, China Beijing and 1994, India) under the responsibility of Commission 46.

The Visiting Lecturer Programme (VLP), under responsibility of Commission 46, has been completed in 1993 for Paraguay. This programme started during the previous triennium and was successful. The VLP in Peru was already in its sixth year in 1991, but there were not that year enough candidates for the requested number of lecturers, as specified in the contract, and no candidates were found in 1992. Candidates have now been found, thanks to the numerous contacts made by D. Wentzel, Chairperson of the Committee for the VLP, and the programme in Peru should be completed in 1994.

During the triennium, 14 Symposia, 15 Colloquia and 2 Regional Astronomy Meeting were held. The Union also co-sponsored 9 meetings with other international Unions and ICSU Committees. Additionally, there has been a special IAU/ICSU/UNESCO meeting on Adverse Environmental Impacts on Astronomy: An Exposition.

The XX1st General Assembly was held in Buenos Aires, Argentina, July 23-August 1, 1991. IAU Transactions XXIB (1992) contains the Report of the Proceedings of the General Assembly of the Union, the Resolutions adopted by the General Assembly and the Report of the business and scientific sessions of the fourty IAU Commissions.

The following publications were issued by the IAU: 7 issues of the Information Bulletins, IAU Transactions XXIB & IAU Transactions XXIIA, Reports on Astronomy & Highlights of Astronomy 9., Ed. J. Bergeron. Also, the History of the IAU by A. Blaauw was published. Furthermore, 14 Symposia have been published during the same period.

Tight contacts have been maintained both with ICSU and COSPAR, and the IAU has been represented in most of international organisations related to Astronomy.

Information concerning IAU Financial Matters maybe found starting p. 102 of these Transactions.

#### **4. Report by the President on the work of the Special Nominating Committee**

The President informed the Assembly that the Special Nominating Committee had

selected the following IAU members for proposal as members of the Executive Committee from 1994 August 24:

|                |                             |                    |
|----------------|-----------------------------|--------------------|
| L. Woltjer     | President                   | <i>Netherlands</i> |
| R. Kraft       | President-Elect             | <i>USA</i>         |
| I. Appenzeller | General Secretary           | <i>Germany</i>     |
| J. Andersen    | Assistant General Secretary | <i>Denmark</i>     |
| C. Anguita     | Vice-President              | <i>Chile</i>       |
| D. Matthewson  | Vice-President              | <i>Australia</i>   |
| F. Pacini      | Vice-President              | <i>Italy</i>       |
| V. Trimble     | Vice-President              | <i>USA</i>         |
| B. Hidayat     | Vice-President              | <i>Indonesia</i>   |
| J. Smak        | Vice-President              | <i>Poland</i>      |
| J. Bergeron    | Adviser                     | <i>France</i>      |
| A.A. Boyarchuk | Adviser                     | <i>Russia</i>      |

### 5. Announcement of the Official Representatives of the Adhering Organisations and of the Representatives to serve on the Nominating Committee

| Country              | National Representative | Nominating Committee |
|----------------------|-------------------------|----------------------|
| <i>Algeria</i>       | -----                   | -----                |
| <i>Argentina</i>     | E.L. Agüero             | E.L. Agüero          |
| <i>Armenia</i>       | L. Mirzoyan             | L. Mirzoyan          |
| <i>Australia</i>     | J. Mould                | J. Mould             |
| <i>Austria</i>       | H.F. Haupt              | H.F. Haupt           |
| <i>Belgium</i>       | J. Henrard              | P. Smeyers           |
| <i>Brazil</i>        | S. Ferraz-Mello         | S. Ferraz-ello       |
| <i>Bulgaria</i>      | M. Kalinkov             | M. Kalinkov          |
| <i>Canada</i>        | L. Higgs                | L. Higgs             |
| <i>Chile</i>         | M.T. Ruiz               | J. Maza              |
| <i>China Nanjing</i> | Q. Qin-yue              | Z. Jun-liang         |
| <i>China Taipei</i>  | C.-K. Chou              | C.-K. Chou           |
| <i>Colombia</i>      | -----                   | -----                |
| <i>Czech R</i>       | M. Vetesnik             | J. Palous            |
| <i>Denmark</i>       | L.K. Kristensen         | L.K. Kristensen      |
| <i>Egypt Ar</i>      | A.M. Osman              | A.M. Osman           |
| <i>Estonia</i>       | J. Einasto              | J. Einasto           |
| <i>Finland</i>       | K. Lumme                | K. Mattila           |
| <i>France</i>        | G. Courtès              | M. Joly              |
| <i>Germany</i>       | R. Wielebinski          | R. Wielebinski       |
| <i>Greece</i>        | -----                   | -----                |
| <i>Hungary</i>       | B. Szeidl               | B. Szeidl            |
| <i>Iceland</i>       | T. Saemundsson          | -----                |
| <i>India</i>         | S.M. Chitre             | J.V. Narlikar        |
| <i>Indonesia</i>     | B. Hidayat              | D. Dawanas           |
| <i>Iran</i>          | Y. Sobouti              | Y. Sobouti           |
| <i>Ireland</i>       | M. Redfen               | M. Redfen            |
| <i>Israel</i>        | -----                   | -----                |
| <i>Italy</i>         | E. Proverbio            | E. Proverbio         |
| <i>Japan</i>         | D. Sugimoto             | D. Sugimoto          |
| <i>Korea DPR</i>     | -----                   | -----                |
| <i>Korea R</i>       | M.S. Chun               | M.S. Chun            |
| <i>Lithuania</i>     | V. Strayzis             | V. Straizis          |

|                           |                       |                  |
|---------------------------|-----------------------|------------------|
| <i>Malaysia</i>           | O. Mazlan             | O. Mazlan        |
| <i>Mexico</i>             | P. Pismis             | C. Allen         |
| <i>Morocco</i>            | -----                 | -----            |
| <i>Netherlands</i>        | E.P.J. van den Heuvel | J.W. Hovenier    |
| <i>New Zealand</i>        | E. Budding            | E. Budding       |
| <i>Norway</i>             | O. Engvold            | O. Elgaroy       |
| <i>Peru</i>               | -----                 | -----            |
| <i>Poland</i>             | K. Stepien            | M. Jerzykiewicz  |
| <i>Portugal</i>           | -----                 | -----            |
| <i>Rumania</i>            | -----                 | -----            |
| <i>Russia</i>             | V.K. Abalakin         | A. Cherepatchuk  |
| <i>Saudi Arabia</i>       | -----                 | -----            |
| <i>Slovak R</i>           | J. Zverko             | M. Zverko        |
| <i>South Africa</i>       | B. Warner             | G.D. Nicolson    |
| <i>Spain</i>              | -----                 | -----            |
| <i>Sweden</i>             | B. Gustafsson         | A. Sandqvist     |
| <i>Switzerland</i>        | A.O. Benz             | A.O. Benz        |
| <i>Tadjikistan</i>        | P.B. Badadzhanov      | P.D. Babadzhanov |
| <i>Turkey</i>             | M.A. Alpar            | M.A. Alpar       |
| <i>UK</i>                 | R.D. Davies           | R.D. Davies      |
| <i>Ukraine</i>            | Ya Yatskiv            | L. Litvinencko   |
| <i>Uruguay</i>            | J. Fernandez          | J. Fernandez     |
| <i>USA</i>                | D.E. Osterbrock       | R.A. Bell        |
| <i>Vatican City State</i> | M.F. McCarthy         | M. McCarthy      |
| <i>Venezuela</i>          | G. Bruzual            | G. Bruzual       |

## 6. Acting Presidents of Commissions

| Commissions | First Session      | Second Session     |
|-------------|--------------------|--------------------|
| 04          | B. Yallop          | B. Yallop          |
| 05          | B. Hauck           | B. Hauck           |
| 06          | -----              | J.E. Grindlay      |
| 07          | S. Ferraz-Mello    | S. Ferraz-Mello    |
| 08          | L.V. Morrison      | L.V. Morrison      |
| 09          | J.C. Bhattacharyya | J.C. Bhattacharyya |
| 10          | V. Gaizauskas      | V. Gaizauskas      |
| 12          | J. Stenflo         | J. Stenflo         |
| 14          | W.L. Wiese         | W.L. Wiese         |
| 15          | A.W. Harris        | A.W. Harris        |
| 16          | D. Morrison        | D. Morrison        |
| 19          | B. Kolaczek        | B. Kolaczek        |
| 20          | A. Carusi          | A. Carusi          |
| 21          | M.S. Hanner        | M.S. Hanner        |
| 22          | -----              | I.P. Williams      |
| 24          | Ch. de Vegt        | Ch. de Vegt        |
| 25          | A.T. Young         | A.T. Young         |
| 26          | H.A. Abt           | H.A. Abt           |
| 27          | J.R. Percy         | J.R. Percy         |
| 28          | E.Ye. Khachikian   | E.Ye. Khachikian   |
| 29          | B. Barbuy          | D.L. Lambert       |
| 30          | G. Burki           | G. Burki           |
| 31          | E. Proverbio       | E. Proverbio       |
| 33          | L. Blitz           | L. Blitz           |
| 34          | H.J. Habing        | H.J. Habing        |
| 35          | P. Demarque        | P. Demarque        |
| 36          | W. Kalkofen        | W. Kalkofen        |

|    |                 |                 |
|----|-----------------|-----------------|
| 37 | J.C. Mermilliod | J.C. Mermilliod |
| 38 | J. Sahade       | J. Sahade       |
| 40 | M. Morimoto     | M. Morimoto     |
| 41 | S.V. Débarbat   | S.V. Débarbat   |
| 42 | Y. Kondo        | Y. Kondo        |
| 44 | J. Trümper      | J. Trümper      |
| 45 | D.J. MacConnell | D.J. MacConnell |
| 46 | L. Gouguenheim  | L. Gouguenheim  |
| 47 | -----           | R.B. Partridge  |
| 48 | J.P. Ostriker   | J.P. Ostriker   |
| 49 | F. Verheest     | F. Verheest     |
| 50 | P.G. Murdin     | P.G. Murdin     |
| 51 | J. Tarter       | J. Tarter       |

## 7. Appointment of the Finance Committee and Corresponding votes

| Country              | Category | Votes <sup>(a)</sup> | Votes <sup>(b)</sup> | Representative       |
|----------------------|----------|----------------------|----------------------|----------------------|
| <i>Algeria</i>       | I        | 1                    | 2                    | -----                |
| <i>Argentina</i>     | III      | 1                    | 4                    | E. Bajaja            |
| <i>Armenia</i>       | I        | 0                    | 0                    | L. Mirzoyan          |
| <i>Australia</i>     | III      | 1                    | 4                    | A.R. Hyland/J. Mould |
| <i>Austria</i>       | I        | 1                    | 2                    | H.F. Haupt           |
| <i>Belgium</i>       | IV       | 1                    | 5                    | P. Smeyers           |
| <i>Brazil</i>        | II       | 1                    | 3                    | -----                |
| <i>Bulgaria</i>      | I        | 0                    | 0                    | I. Kuneva            |
| <i>Canada</i>        | VI       | 1                    | 7                    | J.E. Hesser          |
| <i>Chile</i>         | I        | 0                    | 0                    | M. Rubio             |
| <i>China Nanjing</i> | V        | 1                    | 6                    | S. Hong-jun          |
| <i>China Taipei</i>  | I        | 1                    | 2                    | C.-K. Chou           |
| <i>Colombia</i>      | I        | 0                    | 0                    | -----                |
| <i>Czech R</i>       | II       | 1                    | 3                    | L. Sehnal            |
| <i>Denmark</i>       | II       | 1                    | 3                    | B. Nordström         |
| <i>Egypt AR</i>      | III      | 0                    | 0                    | A.M. Osman           |
| <i>Estonia</i>       | I        | 1                    | 2                    | J. Einasto           |
| <i>Finland</i>       | II       | 1                    | 3                    | K. Lummek            |
| <i>France</i>        | VII      | 1                    | 8                    | J. Kovalevsky        |
| <i>Germany</i>       | VII      | 1                    | 8                    | M. Grewing           |
| <i>Greece</i>        | III      | 1                    | 4                    | -----                |
| <i>Hungary</i>       | II       | 0                    | 0                    | B. Szeidl            |
| <i>Iceland</i>       | I        | 1                    | 2                    | -----                |
| <i>India</i>         | III      | 1                    | 4                    | J.V. Narlikar        |
| <i>Indonesia</i>     | I        | 1                    | 2                    | W. Sutantyo          |
| <i>Iran</i>          | I        | 0                    | 0                    | Y. Sobouti           |
| <i>Ireland</i>       | I        | 1                    | 2                    | P.A. Wayman          |
| <i>Israel</i>        | II       | 1                    | 3                    | -----                |
| <i>Italy</i>         | V        | 1                    | 6                    | E. Proverbio         |
| <i>Japan</i>         | VII      | 1                    | 8                    | D. Sugimoto          |
| <i>Korea DPR</i>     | I        | 0                    | 0                    | -----                |
| <i>Korea R</i>       | I        | 1                    | 2                    | I.S. Nha             |
| <i>Lithuania</i>     | I        | 1                    | 2                    | V. Straizys          |
| <i>Malaysia</i> (*)  | II       | 1                    | NA                   | O. Mazlan            |
| <i>Mexico</i>        | I        | 1                    | 3                    | A. Serrano           |
| <i>Morocco</i>       | I        | 0                    | 0                    | -----                |
| <i>Netherlands</i>   | IV       | 1                    | 5                    | P.C. van der Kruit   |
| <i>New Zealand</i>   | I        | 1                    | 2                    | E. Budding           |
| <i>Norway</i>        | I        | 0                    | 0                    | J.-E. Solheim        |

|                           |     |          |   |    |                      |
|---------------------------|-----|----------|---|----|----------------------|
| <i>Peru</i>               | (*) | I        | 1 | NA | -----                |
| <i>Poland</i>             |     | III      | 1 | 4  | M. Sarna             |
| <i>Portugal</i>           |     | II       | 1 | 3  | J.P. Osorio          |
| <i>Rumania</i>            | (*) | I        | 0 | NA | -----                |
| <i>Russia</i>             |     | V        | 1 | 6  | B. Shustov           |
| <i>Saudi Arabia</i>       |     | I        | 1 | 2  | -----                |
| <i>Slovak R</i>           |     | I        | 1 | 2  | E. Pittich           |
| <i>South Africa</i>       |     | III      | 1 | 4  | M.W. Feast           |
| <i>Spain</i>              |     | II       | 1 | 3  | -----                |
| <i>Sweden</i>             |     | III      | 1 | 4  | A. Ardeberg          |
| <i>Switzerland</i>        |     | III      | 1 | 4  | A.O. Benz            |
| <i>Tadjikistan</i>        | (*) | I        | 0 | NA | P.P. Babadzhanov     |
| <i>Turkey</i>             |     | I        | 1 | 2  | M.A. Alpar           |
| <i>UK</i>                 |     | VII      | 1 | 8  | R.D. Davies          |
| <i>Ukraine</i>            |     | II       | 1 | 3  | V. Tel'Nyuk-Adamchuk |
| <i>Uruguay</i>            |     | I        | 1 | 2  | J. Fernandez         |
| <i>USA</i>                |     | VIII 1/2 | 1 | 10 | P.B. Boyce           |
| <i>Vatican City State</i> |     | I        | 1 | 2  | M. McCarthy          |
| <i>Venezuela</i>          |     | I        | 1 | 2  | G. Bruzual           |

- (a) as per article 15a of the Statutes  
 (b) as per article 15b of the Statutes  
 (\*) Associate member

## 8. Revision of the Statutes and Bye-Laws

A revised version of the Statutes and Bye-Laws has been submitted to the Adhering Organisations in due time. The proposed modifications are approved by the General Assembly (See Chapter IV, pp. 71-98). They concern:

Statutes: 6 (b), 6 (c) & 22 (a);

Bye-Laws: 6, 11, 12 (a), 13 (a), 16 & 18 (a);

Working Rules: A new article (numbered 1.) has been added. Therefore, the subsequent articles have been renumbered as n + 1. Changes have occurred in articles: 9, 21 & 36 (new numbering).

## 9. Appointment of the Resolutions Committee

The President informed the Assembly that the Executive Committee proposed the establishment of a Resolutions Committee under the Chairmanship of Professor J.C. Pecker, with Professors M. McCarthy, J. Sahade, J. Smak, P. Wayman and B.D. Yallop. The General Assembly unanimously agreed to this composition of the Resolutions Committee.

## 10. Resolutions submitted by Adhering Organisations

No Resolutions were proposed to the XXII<sup>nd</sup> General Assembly by Adhering Organisations.

## **11. Resolutions submitted by Commissions or Associated Inter-Union Commissions**

No Resolutions were proposed to the XXIIInd General Assembly by Commissions or by Associated Inter-Union Commissions.



## Second Session

held in the Prins Willem-Alexanderzaal  
1994 August 24, 16.30  
Acad. A.A. Boyarchuk, President, in the Chair

### 12. Financial matters

#### Report of the Finance Committee, by Peter B. Boyce

The Finance Committee appointed a subcommittee to make an examination of the accounts and the proposed budget of the Union and to prepare the report for presentation to the General Assembly. The subcommittee was composed of: P.B. Boyce (USA), Chair, J. Hesser (Canada), B. Nordstrom (Denmark), V. Straizys (Lithuania) & P. Wayman (Ireland).

The subcommittee report was adopted by the Finance Committee as follows:

*This is a time of rapid change in the status of many countries and institutions. So, too, the financial operations of the IAU have undergone significant changes in the last three years. A list of significant recommendations were made by the Finance Committee in 1991, and the present Committee notes with great approval that virtually every item on that list has been addressed actively and successfully. We commend the General Secretary and the office staff for their effectiveness in the financial area.*

*The Finance Committee is very pleased that the change to accrual accounting as recommended at the previous General Assembly has been instituted. In this method of reporting, which is now being required for most organisations, the expenses incurred within a given year are counted in that year's expenditure, no matter when they were actually paid. While more complicated to use, this method allows program costs to be compared effectively with budget amounts, which was not possible under the old cash system.*

*The Committee is also pleased that the fiscal reports have been reorganised such that the reports and the budgets are made for the same period. It is now much easier to make the comparison between budget and actual expenditures which is vital for responsible fiscal management. However, since the budget for the first year of the new triennium was prepared three years ago, conditions have changed and the budget does not represent actual conditions. The Committee recommends that in the future the General Secretary prepare, as part of the budget process, a revised budget for the first year of the new triennium which reflects up-to-date information.*

*On a matter which concerned the Committee in 1991, the Committee notes with pleasure the sharply reduced costs of operating the Executive Committee during the last triennium. In fact, the growth in the total administrative costs of the Union have been minimal. The Committee encourages the next General Secretary to continue efforts to control the growth of administrative costs. In particular we encourage the Presidents of Commissions and others who travel on behalf of the Union to seek funding from their own countries and organisations and not automatically expect to receive full travel support from the Union.*

*The Finance Committee wishes to commend the General Secretary for achieving a high return on the IAU investments and for securing a particularly large quantity of special contributions of the Union. Both these sources of income have been important to the operation of the Union during the last three years. In particular, the generosity of the contributing organizations has made it possible to expand the amount of support for*

*scientific activities by 25 percent, and the amount for grants to travel to the General Assembly by a factor of 2.5 above the previous triennium. This represents a real change in the balance between science and administration and we encourage the next General Secretary to pursue with vigor additional special contributions which can provide for an even stronger program of scientific activities during the next triennium.*

*The Committee notes that the Union has established the position of Treasurer who is acting in the role of advisor to the General Secretary who prepares the budgets. In time the role of the Treasurer should be more clearly defined. In addition, the Committee notes that the Chair of the Finance Committee has informally provided advice regarding financial matters to the General Secretary during the last triennium. The Committee recommends that this practice continue.*

*At the last General Assembly, the Committee recommended that the financial reserves be kept at a value equal to one year's operations. In light of the growing fiscal uncertainty faced by many institutions around the world, the Finance Committee recommends that a one year's reserve be considered a minimum and appropriate value.*

*The operations of the Union do not seem to be taking as much advantage of electronic communication as might be desired. The Committee envisions that, in the long run, substantial savings in printing and postage will result, and the immediate value of having up to date information readily available, e.g. lists of commission officers, membership, national representatives, etc., is obvious.*

*The Committee notes the inflation rate of three percent per year projected for the next triennium (1994-96 and provisionally for 1997) is reasonable, and recommends adoption of the following rates for the unit of contribution:*

*1995: 2660, 1996: 2740, 1997: 2820*

*Finally, the Committee has inspected the proposed budget for the remainder of the triennium, 1994-96 and the provisional budget for the year 1997. We find this budget to be reasonable and recommend its adoption.*

*Respectfully submitted,  
The Hague, August 22, 1994.*

#### **Vote on proposed budget for 1994-1996 & 1997**

The budget is accepted unanimously.

### **13. Vote on the change of Statutes and Bye-Laws**

The proposed modifications are accepted. The Statutes as of August 24, 1995, are included in the Transactions (Chapter IV, pp. 71-88).

### **14. Restructuring of Commissions and Working Groups**

The General Assembly accepts the merging of Commissions 44 (Astronomy from Space) & 48 (High-Energy Astrophysics), into Commission 44: Space and High Energy Astrophysics.

## 15. Nomination of Commission Presidents & Vice-Presidents and EC Working Group Presidents

| Commissions | President                         | Vice-President(s)                 |
|-------------|-----------------------------------|-----------------------------------|
| 04          | H. Kinoshita, <i>Japan</i>        | E.M. Standish, <i>USA</i>         |
| 05          | B. Hauck, <i>Switzerland</i>      | O.B. Dluzhnevskaya, <i>Russia</i> |
| 06          | R.M. West, <i>Germany</i>         | B. Marsden, <i>USA</i>            |
| 07          | S. Ferraz-Mello, <i>Brazil</i>    | C. Froeschle, <i>France</i>       |
| 08          | T.E. Corbin, <i>USA</i>           | H. Schwann, <i>Germany</i>        |
| 09          | G. Lelièvre, <i>France</i>        | D. Malin, <i>Australia</i>        |
| 10          | O. Engvold, <i>Norway</i>         | Guoxiang Ai, <i>China Nanjing</i> |
| 12          | F.L. Deubner, <i>Germany</i>      | P. Foukal, <i>USA</i>             |
| 14          | W.H. Parkinson, <i>USA</i>        | F. Rostas, <i>France</i>          |
| 15          | M.F. A'Hearn, <i>USA</i>          | V. Zappala, <i>Italy</i>          |
| 16          | M.Ya Marov, <i>Russia</i>         | C. de Bergh, <i>France</i>        |
| 19          | J. Vondrak, <i>Czech R</i>        | D.D. McCarthy, <i>USA</i>         |
| 20          | D.K. Yeomans, <i>USA</i>          | H. Rickman, <i>Sweden</i>         |
| 21          | C. Leinert, <i>Germany</i>        | S. Bowyer, <i>USA</i>             |
| 22          | I.P. Williams, <i>UK</i>          | J. Baggaley, <i>New-Zealand</i>   |
| 24          | C. Turon-Lacarrieu, <i>France</i> | P. Ianna, <i>USA</i>              |
| 25          | J.D. Landstreet, <i>Canada</i>    | C.L. Sterken, <i>Belgium</i>      |
| 26          | C.E. Worley, <i>USA</i>           | H. Zinnecker, <i>Germany</i>      |
| 27          | M. Jerzykiewicz, <i>Poland</i>    | D. Kurz, <i>South Africa</i>      |
| 28          | V.L. Trimble, <i>USA</i>          | F. Bertola, <i>Italy</i>          |
| 29          | M.S. Bessell, <i>Australia</i>    | B. Barbuy, <i>Brazil</i>          |
| 30          | C.D. Scarfe, <i>Canada</i>        | J. Hearnshaw, <i>New Zealand</i>  |
| 31          | H.F. Fliegel, <i>USA</i>          | T. Fukushima, <i>Japan</i>        |
| 33          | J.J. Binney, <i>UK</i>            | K.C. Freeman, <i>Australia</i>    |
| 34          | D.R. Flower, <i>UK</i>            | M. Dopita, <i>Australia</i>       |
| 35          | C.S. Chiosi, <i>Italy</i>         | J.-P. Zahn, <i>France</i>         |
| 36          | L.D. Cram, <i>Australia</i>       | R. Pallavicini, <i>Italy</i>      |
| 37          | A. Feinstein, <i>Argentina</i>    | G. da Costa, <i>Australia</i>     |
| 38          | H.E. Jorgensen, <i>Denmark</i>    | M. Roberts, <i>USA</i>            |
| 40          | J.B. Whiteoak, <i>Australia</i>   | J. Moran, <i>USA</i>              |
| 41          | S.M.R. Ansari, <i>India</i>       | S. Dick, <i>USA</i>               |
| 42          | M. Rodono, <i>Italy</i>           | E.F. Guinan, <i>USA</i>           |
| 44          | G.G. Fazio, <i>USA</i>            | ( G. Srinivasan, <i>India</i>     |
| 45          | O.H. Levato, <i>Argentina</i>     | W. Wamsteker, <i>Spain</i>        |
| 46          | J.R. Percy, <i>Canada</i>         | M. Gerbaldi, <i>France</i>        |
| 47          | J.V. Narlikar, <i>India</i>       | J. Fierro, <i>Mexico</i>          |
| 49          | H.W. Ripken, <i>Germany</i>       | ( P. Shaver, <i>Germany</i>       |
| 50          | S. Isobe, <i>Japan</i>            | A. Szalay, <i>Hungary</i>         |
| 51          | J.C. Tarter, <i>USA</i>           | F. Verheest, <i>Belgium</i>       |
|             |                                   | W. Sullivan, <i>USA</i>           |
|             |                                   | F. Colomb, <i>Argentina</i>       |

### EC Working Groups

|        |                             |
|--------|-----------------------------|
| WGEDAA | M. Burton, <i>Australia</i> |
| WGPSN  | K. Aksnes, <i>Norway</i>    |
| WGWWDA | A. Batten, <i>Canada</i>    |

## 16. Report of the work of the Resolutions Committee

At the request of the President, Dr. J.-C. Pecker, Chairman of the Resolutions Committee, reported about the work of the Committee. Prior to reading the resolutions, Dr. Pecker made the following announcement:

*Mister President, Colleagues,*

*The Resolutions Committee met three times between the two sessions of the General Assembly and examined 25 Resolutions.*

*First of all, we recall that motions or proposals can be presented by:*

- 1) the Executive Committee (A)*
- 2) the Adhering Organizations (A)*
- 3) the Commissions, or Joint Discussions among several Commissions (B, C).*

*We have not received any proposals originating from the Executive Committee, and we have not received any proposals originating from the Adhering Organizations.*

*I would now allow myself to insist upon the fact that each forthcoming vote may be preceded by interventions of members of the Executive Committee, or of attending members of the IAU, -or both!*

*J.-C. Pecker*

### 16a. Resolutions with financial implications, voted by the Adhering Organizations

*In accordance with articles VIII 14, 15 & 16 of the Statutes of the IAU, Resolutions B1 and B2, which have financial implications for the IAU, require a vote of the Adhering Countries, where the number of votes differs from one Adhering Country to another.*

#### **Resolution n° B1: on supporting the Lund Meteor Data Center**

proposed by Commission 22

The XXII<sup>nd</sup> General Assembly of the International Astronomical Union

**Recognising** the extensive use that is being made of the archival material held by the Lund Meteor Data Center (more than fifty data sets distributed during the past three years), and

**Noting** that such use is increasing as the amount of data expands with time,

**Resolves** that the International Astronomical Union be requested to maintain the modest level of financial support (currently, CHF 3300 per triennium) which has been granted in the past in order that the valuable role of the Lund Meteor Data Center be preserved.

#### **Résolution n° B1 sur le soutien au Lund Meteor Data Center**

La XXII<sup>e</sup> Assemblée Générale de l'Union Astronomique Internationale

**reconnaissant** l'usage fréquent qui est fait des archives du "Lund Meteor Data Center" (plus de 50 ensembles de données distribués pendant les trois dernières années), et

**notant** que cet usage ne peut que s'accroître avec l'augmentation continue du nombre des données avec le temps,

adopte la résolution de demander à IUAJ de maintenir le modeste soutien financier (actuellement 3 300 CHF triennaux) qui a été accordé dans le passé, afin que le rôle considérable du Lund Meteor Data Center soit maintenu.

**Resolution n° B2 on Funding the Archival Organization of the International Astronomical Union**

proposed by Commission 41

The XXIIInd General Assembly of the International Astronomical Union

Noting that the International Astronomical Union allocated funds for preparation of the "History of the IAU" by Prof. Blaauw, not all of which has been spent,

Suggests to the Executive Committee that these remaining funds be used for the archival organization and cataloguing of the early IAU files in preparation for depositing them in a suitable archive.

**Résolution n° B2 : Financement de l'organisation des archives de l'Union Astronomique Internationale**

La XXIIe Assemblée Générale de l'Union Astronomique Internationale

notant que les fonds alloués par l'UAI pour la préparation de "l'Histoire de l'UAI" par le Professeur Blaauw n'ont pas été totalement utilisés,

suggère au Comité Exécutif que les fonds restants soient utilisés pour l'organisation de l'archivage et la préparation d'un inventaire des anciens documents de l'UAI en vue de les conserver dans un fonds d'archives approprié.

**16b. Resolutions without financial implications, voted by the Adhering Organizations**

*In accordance with the same articles VIII 14, 15 & 16 of the Statutes of the IAU, Resolutions B3 to B16, which have no financial implications but which the Committee considers to be important because of their implications for organizations other than the IAU or for the general public, require a vote of the Adhering Countries, where each Adhering Country has a single vote.*

*I shall read them now, in the language in which they were submitted:*

**Resolution n° B3 on the Measurement and Mitigation of Adverse Environmental Impacts on Astronomy**

proposed by Commission 5

The XXIIInd General Assembly of the International Astronomical Union

Recalling the wide range of resolutions from previous assemblies of the International Astronomical Union on mitigation of adverse environmental impacts on astronomy,

Noting the publication of survey of environmental threats to astronomy in the book "The Vanishing Universe",

Deploring the evidence which the book contains of continuing and worsening interference with astronomical observations,

Requests the National Adhering Organizations to encourage, support and finance national activity to monitor and ameliorate adverse environmental impacts on astronomy in their countries.

**Résolution n° B3 sur la mesure et la réduction des nuisances sur l'environnement préjudiciables à l'astronomie**

proposé par la Commission 5

La XXIIe Assemblée Générale de l'Union Astronomique Internationale

**Rappelant** le grand nombre de résolutions des assemblées générales précédentes de l'UAI sur la nécessité de maîtriser les nuisances sur l'environnement préjudiciables à l'astronomie,

**Notant** la publication d'un relevé des menaces de ce genre préjudiciables à l'astronomie, comme le livre "The Vanishing Universe",

**Déplorant** le témoignage qu'apporte cet ouvrage, de la continuation et de l'aggravation des nuisances perturbant l'observation astronomique,

**Demande** aux Organisations Nationales Adhérentes d'encourager, de soutenir et de financer une activité nationale pour contrôler et réduire les perturbations sur l'environnement préjudiciables à l'astronomie dans leurs pays respectifs.

**Resolution n° B4 on the Prohibition of Satellite Systems having potentially adverse impacts on astronomy**

proposed by Commission 40

The XXIInd General Assembly of the International Astronomical Union

**Noting** the establishment by ICSU of an inter-union Working Group on Adverse Environmental Impacts on astronomy to coordinate and support the work of IAU, COSPAR, and IUCAF in their respective areas of competence,

**Viewing** with concern recent experiments and future proposals for solar reflectors in space and for microwave beaming of solar power from space to ground,

**Deploring** any creation of artificial bright sources of light or radio power in the sky that can interfere with astronomical observations,

**Requests** the Executive Committee to work with ICSU, other International Unions and the Space Agencies to create policies with international force to prohibit such satellite systems where an adverse environmental impact on astronomy can be expected.

*COSPAR Committee on Space Research*

*ICSU International Council for Scientific Unions*

*IUCAF Inter-Union Commission on Frequency Allocations for Radio Astronomy and Space Sciences*

**Résolution n° B4 sur l'Interdiction de Systemes Satellitaires entraînant des perturbations susceptibles d'être préjudiciables à l'Astronomie**

proposée par la Commission 40

La XXIIe Assemblée Générale de l'Union Astronomique Internationale

**Notant** l'établissement par l'ICSU d'un groupe de travail inter-unions sur les répercussions sur l'environnement nuisibles à l'Astronomie destiné à coordonner et à soutenir les travaux de l'UAI, du COSPAR et de l'IUCAF dans leurs domaines de compétence respectifs,

**Constatant** avec inquiétude des expériences récentes, et des propositions pour l'avenir, de réflecteurs solaires dans l'espace pour renvoyer l'énergie solaire par voie micro-onde vers le sol,

**Déplorant** toute création de sources brillantes de lumière ou de puissance radio dans le ciel pouvant interférer avec l'observation astronomique,

**Demande au Comité Exécutif de travailler avec l'ICSU, les autres Unions Internationales et les Agences Spatiales pour promouvoir des règles internationales afin d'interdire de tels systèmes satellitaires susceptibles d'induire des perturbations préjudiciales à l'environnement dans le domaine de l'astronomie.**

**Resolution n° B5 on the Working Group on Reference Frames**

proposed by the participants in Symposium n° 166

The XXIIInd General Assembly of the International Astronomical Union

**Considering** that the IAU Working Group on Reference Frames consisting of members of Commissions 4, 8, 19, 24 and 31, the International Rotation Service (IERS) and other pertinent experts has been formed to produce a list of candidate extragalactic radio sources for defining the new conventional reference frame and secondary sources that may later be added to the primary sources or replace some of the primary sources,

**Noting** that a list of sources which define the conventional reference frame together with list of candidate sources which may, at some future date, be added to or replace the defining sources has been made,

**Recommends** that this list of defining sources be adopted by the XXIIInd General Assembly (1994) as the first stage in the definition of the new reference frame, and

**Requests** that the Working Group on Reference Frames be continued and its membership be reviewed by Commissions 4, 8, 19, 24 and 31 and the IERS to

1. define the positions of the radio sources on the list,
2. determine the relationship of this frame to an optical frame defined by stars, and
3. recommend to the XXIIIrd General Assembly (1997) that a way be found to organize the work for the maintenance and evolution of this frame and its extension to other frames at other wavelengths.

**Annexe to Resolution B5**

List of extragalactic objects identified sources which define the new conventional celestial reference frame together with candidate sources which may, at some future date, be added or replace the defining sources:

d: defining sources  
c: additional sources  
o: optical objects

|   | Name     |      | R.A.  |     | Dec.     | Alias                |
|---|----------|------|-------|-----|----------|----------------------|
| d | 0003-066 | 0 6  | 13.89 | -6  | 23 35.3  | PKS 0003-066         |
| d | 0007+106 | 0 10 | 31.01 | 10  | 58 29.5  | IIIZW2, PKS 0007+106 |
| d | 0007+171 | 0 10 | 33.99 | 17  | 24 18.8  | 4C+17.04             |
| d | 0008-264 | 0 11 | 1.25  | -26 | 12 33.4  | PKS 0008-264         |
| d | 0010+405 | 0 13 | 31.13 | 40  | 51 37.1  | B3 0010+406          |
| d | 0013-005 | 0 16 | 11.09 | 0   | -15 12.5 | PKS 0013-005         |
| d | 0014+813 | 0 17 | 8.48  | 81  | 35 8.1   | S5 0014+81           |
| d | 0016+731 | 0 19 | 45.79 | 73  | 27 30.0  | S5 0016+73           |
| d | 0019+058 | 0 22 | 32.44 | 6   | 8 4.3    | PKS 0019+058         |

|   | Name     |   |    | R.A.  |     |    | Dec. | Alias             |
|---|----------|---|----|-------|-----|----|------|-------------------|
| d | 0026+346 | 0 | 29 | 14.24 | 34  | 56 | 32.2 | OB343, S4 0026+34 |
| d | 0039+230 | 0 | 42 | 4.55  | 23  | 20 | 1.1  | PKS 0039+230      |
| d | 0047-579 | 0 | 49 | 59.47 | -57 | 38 | 27.3 | PKS 0047-579      |
| d | 0048-097 | 0 | 50 | 41.32 | -9  | 29 | 5.2  | PKS 0048-097      |
| d | 0056-572 | 0 | 58 | 46.58 | -56 | 59 | 11.5 | PKS 0056-572      |
| d | 0056-001 | 0 | 59 | 5.51  | 0   | 6  | 51.6 | 4C-00.06          |
| d | 0059+581 | 1 | 2  | 45.76 | 58  | 24 | 11.1 |                   |
| d | 0104-408 | 1 | 6  | 45.11 | -40 | 34 | 20.0 |                   |
| d | 0106+013 | 1 | 8  | 38.77 | 1   | 35 | 0.3  | 4C+01.02          |
| d | 0109+224 | 1 | 12 | 5.82  | 22  | 44 | 38.8 |                   |
| d | 0111+021 | 1 | 13 | 43.14 | 2   | 22 | 17.3 |                   |
| d | 0112-017 | 1 | 15 | 17.10 | -1  | 27 | 4.6  | PKS 0112-014      |
| d | 0113-118 | 1 | 16 | 12.52 | -11 | 36 | 15.4 | PKS 0113-118      |
| d | 0119+115 | 1 | 21 | 41.59 | 11  | 49 | 50.4 | PKS 0119+115      |
| d | 0119+041 | 1 | 21 | 56.86 | 4   | 22 | 24.7 | IRAS F01177+      |
| d | 0123+257 | 1 | 26 | 42.79 | 25  | 59 | 1.3  |                   |
| d | 0131-522 | 1 | 33 | 5.76  | -52 | 0  | 4.0  | PKS 0131-522      |
| d | 0133+476 | 1 | 36 | 58.59 | 47  | 51 | 29.1 |                   |
| d | 0135-247 | 1 | 37 | 38.35 | -24 | 30 | 53.9 |                   |
| d | 0134+329 | 1 | 37 | 41.30 | 33  | 9  | 35.1 | 3C48, 4C+39.25    |
| d | 0146+056 | 1 | 49 | 22.37 | 5   | 55 | 53.6 | PKS 0146+056      |
| d | 0148+274 | 1 | 51 | 27.15 | 27  | 44 | 41.8 |                   |
| d | 0149+218 | 1 | 52 | 18.06 | 22  | 7  | 7.7  | PKS 0149+218      |
| d | 0150-334 | 1 | 53 | 10.12 | -33 | 10 | 25.9 | PKS 0150-334      |
| d | 0153+744 | 1 | 57 | 34.96 | 74  | 42 | 43.2 |                   |
| d | 0159+723 | 2 | 3  | 33.38 | 72  | 32 | 53.7 |                   |
| d | 0201+113 | 2 | 3  | 46.66 | 11  | 34 | 45.4 | PKS 0201+113      |
| d | 0202+149 | 2 | 4  | 50.41 | 15  | 14 | 11.0 | 4C+15.05          |
| d | 0202-172 | 2 | 4  | 57.67 | -17 | 1  | 19.8 | PKS 0202-172      |
| d | 0202+319 | 2 | 5  | 4.93  | 32  | 12 | 30.1 | B2 0202+31        |
| d | 0208-512 | 2 | 10 | 46.20 | -51 | 1  | 1.9  | PKS 0208-512      |
| d | 0212+735 | 2 | 17 | 30.81 | 73  | 49 | 32.6 | S5 0212+73        |
| d | 0215+015 | 2 | 17 | 48.95 | 1   | 44 | 49.7 |                   |
| d | 0219+428 | 2 | 22 | 39.61 | 43  | 2  | 7.8  |                   |
| d | 0220-349 | 2 | 22 | 56.40 | -34 | 41 | 28.7 | PKS 0220-349      |
| d | 0221+067 | 2 | 24 | 28.43 | 6   | 59 | 23.3 |                   |
| d | 0224+671 | 2 | 28 | 50.05 | 67  | 21 | 3.0  | 4C+67.05          |
| d | 0230-790 | 2 | 29 | 34.95 | -78 | 47 | 45.6 | PKS 0230-790      |
| d | 0229+131 | 2 | 31 | 45.89 | 13  | 22 | 54.7 | 4C+13.14          |
| d | 0234+285 | 2 | 37 | 52.41 | 28  | 48 | 9.0  | 4C+28.07          |



|   | Name     |      | R.A.  |        | Dec. | Alias                 |
|---|----------|------|-------|--------|------|-----------------------|
| d | 0235+164 | 2 38 | 38.93 | 16 36  | 59.3 | PKS 0235+164          |
| d | 0237+040 | 2 39 | 51.26 | 4 16   | 21.4 | PKS 0237+040          |
| d | 0238-084 | 2 41 | 4.80  | -8 15  | 20.8 | NGC1052, PKS 0238-084 |
| d | 0239+108 | 2 42 | 29.17 | 11 1   | 0.7  | PKS 0239+108          |
| d | 0248+430 | 2 51 | 34.54 | 43 15  | 15.8 | S4 0248+43            |
| d | 0252-549 | 2 53 | 29.18 | -54 41 | 51.4 | PKS 0252-549          |
| d | 0256+075 | 2 59 | 27.08 | 7 47   | 39.6 |                       |
| d | 0259+121 | 3 2  | 30.55 | 12 18  | 56.7 |                       |
| d | 0300+470 | 3 3  | 35.24 | 47 16  | 16.3 | OE400, 4C+47.08       |
| d | 0302-623 | 3 3  | 50.63 | -62 11 | 25.6 | PKS 0302-623          |
| d | 0302+625 | 3 6  | 42.66 | 62 43  | 2.0  |                       |
| d | 0306+102 | 3 9  | 3.62  | 10 29  | 16.3 | OE110                 |
| d | 0308-611 | 3 9  | 56.10 | -60 58 | 39.1 | PKS 0308-611          |
| d | 0312-770 | 3 11 | 55.25 | -76 51 | 50.9 | PKS 0312-770          |
| d | 0309+411 | 3 13 | 1.96  | 41 20  | 1.2  |                       |
| d | 0319+121 | 3 21 | 53.10 | 12 21  | 13.9 | PKS 0319+121          |
| d | 0326+279 | 3 29 | 57.67 | 27 56  | 15.5 | 0326+277              |
| d | 0332-403 | 3 34 | 13.65 | -40 8  | 25.4 | PKS 0332-403          |
| d | 0333+321 | 3 36 | 30.11 | 32 18  | 29.3 | NRAO140, 4C+32.14     |
| d | 0336-019 | 3 39 | 30.94 | -1 46  | 35.8 | CTA26, PKS 0336-019   |
| d | 0338-214 | 3 40 | 35.61 | -21 19 | 31.2 | PKS 0338-214          |
| d | 0341+158 | 3 44 | 23.17 | 15 59  | 43.4 |                       |
| d | 0342+147 | 3 45 | 6.42  | 14 53  | 49.6 |                       |
| d | 0400+258 | 4 3  | 5.59  | 26 0   | 1.5  | PKS 0400+258          |
| d | 0402-362 | 4 3  | 53.75 | -36 5  | 1.9  | PKS 0402-362          |
| d | 0405+305 | 4 8  | 20.38 | 30 32  | 30.5 |                       |
| d | 0406-127 | 4 9  | 5.77  | -12 38 | 48.1 |                       |
| d | 0406+121 | 4 9  | 22.01 | 12 17  | 39.8 | PKS 0406+121          |
| d | 0414-189 | 4 16 | 36.54 | -18 51 | 8.3  | PKS 0414-189          |
| d | 0420-014 | 4 23 | 15.80 | -1 20  | 33.1 | PKS 0420-014          |
| d | 0420+417 | 4 23 | 56.01 | 41 50  | 2.7  |                       |
| d | 0422-380 | 4 24 | 42.24 | -37 56 | 20.8 |                       |
| d | 0422+004 | 4 24 | 46.84 | 0 36   | 6.3  | OF038, PKS 0422+004   |
| d | 0423+051 | 4 26 | 36.60 | 5 18   | 19.9 | PKS 0423+051          |
| d | 0425+048 | 4 27 | 47.57 | 4 57   | 8.3  |                       |
| d | 0426-380 | 4 28 | 40.42 | -37 56 | 19.6 | PKS 0426-380          |
| d | 0434-188 | 4 37 | 1.48  | -18 44 | 48.6 | PKS 0434-188          |
| d | 0437-454 | 4 39 | 0.85  | -45 22 | 22.6 |                       |
| d | 0438-436 | 4 40 | 17.18 | -43 33 | 8.6  | PKS 0438-436          |
| d | 0440-003 | 4 42 | 38.66 | 0 -17  | 43.4 | NRAO190, PKS 0440-003 |

|   | Name     |   |    | R.A.  |     | Dec. |      | Alias           |
|---|----------|---|----|-------|-----|------|------|-----------------|
| d | 0440+345 | 4 | 43 | 31.63 | 34  | 41   | 6.7  |                 |
| d | 0446+112 | 4 | 49 | 7.67  | 11  | 21   | 28.6 |                 |
| d | 0454-810 | 4 | 50 | 5.44  | -81 | 1    | 2.2  | PKS 0454-810    |
| d | 0451-282 | 4 | 53 | 14.65 | -28 | 7    | 37.3 | PKS 0451-282    |
| d | 0454-234 | 4 | 57 | 3.18  | -23 | 24   | 52.0 |                 |
| d | 0457+024 | 4 | 59 | 52.05 | 2   | 29   | 31.2 | PKS 0457+024    |
| d | 0458-020 | 5 | 1  | 12.81 | -1  | 59   | 14.3 | 4C-02.19        |
| d | 0458+138 | 5 | 1  | 45.27 | 13  | 56   | 7.2  |                 |
| d | 0459+060 | 5 | 2  | 15.45 | 6   | 9    | 7.5  |                 |
| d | 0500+019 | 5 | 3  | 21.20 | 2   | 3    | 4.7  |                 |
| d | 0502+049 | 5 | 5  | 23.18 | 4   | 59   | 42.7 |                 |
| d | 0506-612 | 5 | 6  | 43.99 | -61 | 9    | 41.0 | PKS 0506-612    |
| d | 0454+844 | 5 | 8  | 42.36 | 84  | 32   | 4.5  | S5 0454+84      |
| d | 0506+101 | 5 | 9  | 27.46 | 10  | 11   | 44.6 |                 |
| d | 0507+179 | 5 | 10 | 2.37  | 18  | 0    | 41.6 | PKS 0507+179    |
| d | 0511-220 | 5 | 13 | 49.11 | -21 | 59   | 16.1 | PKS 0511-220    |
| d | 0516-621 | 5 | 16 | 44.93 | -62 | 7    | 5.4  |                 |
| d | 0518+165 | 5 | 21 | 9.89  | 16  | 38   | 22.0 | 3C138, 4C+16.12 |
| d | 0522-611 | 5 | 22 | 34.43 | -61 | 7    | 57.1 | PKS 0522-611    |
| d | 0521-365 | 5 | 22 | 57.98 | -36 | 27   | 30.9 | PKS 0521-365    |
| d | 0530-727 | 5 | 29 | 30.04 | -72 | 45   | 28.5 | PKS 0530-727    |
| d | 0528-250 | 5 | 30 | 7.96  | -25 | 3    | 29.9 | PKS 0528-250    |
| d | 0528+134 | 5 | 30 | 56.42 | 13  | 31   | 55.1 | PKS 0528+134    |
| d | 0537-441 | 5 | 38 | 50.36 | -44 | 5    | 8.9  | PKS 0537-441    |
| d | 0537-158 | 5 | 39 | 32.01 | -15 | 50   | 30.3 | PKS 0537-158    |
| d | 0536+145 | 5 | 39 | 42.37 | 14  | 33   | 45.6 |                 |
| d | 0537-286 | 5 | 39 | 54.28 | -28 | 39   | 56.0 | PKS 0537-286    |
| d | 0539-057 | 5 | 41 | 38.08 | -5  | 41   | 49.4 | PKS 0539-057    |
| d | 0538+498 | 5 | 42 | 36.14 | 49  | 51   | 7.2  | 3C147, 4C+49.14 |
| d | 0544+273 | 5 | 47 | 34.15 | 27  | 21   | 56.8 |                 |
| d | 0552+398 | 5 | 55 | 30.81 | 39  | 48   | 49.2 | B2 0552+39A     |
| d | 0556+238 | 5 | 59 | 32.03 | 23  | 53   | 53.9 |                 |
| d | 0600+177 | 6 | 3  | 9.13  | 17  | 42   | 16.8 |                 |
| d | 0605-085 | 6 | 7  | 59.70 | -8  | 34   | 50.0 | PKS 0605-085    |
| d | 0607-157 | 6 | 9  | 40.95 | -15 | 42   | 40.7 | PKS 0607-157    |
| d | 0609+607 | 6 | 14 | 23.87 | 60  | 46   | 21.8 |                 |
| d | 0615+820 | 6 | 26 | 3.00  | 82  | 2    | 25.6 | S5 0615+82      |
| d | 0629-418 | 6 | 31 | 12.00 | -41 | 54   | 26.9 | PKS 0629-418    |
| d | 0637-752 | 6 | 35 | 46.51 | -75 | 16   | 16.8 | PKS 0637-752    |
| d | 0637-337 | 6 | 39 | 20.90 | -33 | 46   | 0.1  | PKS 0637-337    |

|   | Name     |   |    | R. A. |     |     | Dec. | Alias               |
|---|----------|---|----|-------|-----|-----|------|---------------------|
| d | 0636+680 | 6 | 42 | 4.26  | 67  | 58  | 35.6 | S4 0636+68          |
| d | 0624+214 | 6 | 45 | 24.10 | 21  | 21  | 51.2 | 3C166, 4C+21.21     |
| d | 0642+449 | 6 | 46 | 32.03 | 44  | 51  | 16.6 | B3 0642+449         |
| d | 0646-306 | 6 | 48 | 14.10 | -30 | 44  | 19.7 | PKS 0646-306        |
| d | 0650+371 | 6 | 53 | 58.28 | 37  | 5   | 40.6 | S4 0650+37          |
| d | 0657+172 | 7 | 0  | 1.53  | 17  | 9   | 21.7 |                     |
| d | 0707+476 | 7 | 10 | 46.10 | 47  | 32  | 11.1 | B3 0707+476         |
| d | 0711+356 | 7 | 14 | 24.82 | 35  | 34  | 39.8 |                     |
| d | 0716+714 | 7 | 21 | 53.45 | 71  | 20  | 36.4 | S5 0716+71          |
| d | 0722+145 | 7 | 25 | 16.81 | 14  | 25  | 13.7 | 4C+14.23            |
| d | 0723-008 | 7 | 25 | 50.64 | 0   | -54 | 56.5 | PKS 0723-008        |
| d | 0718+792 | 7 | 26 | 11.73 | 79  | 11  | 31.0 |                     |
| d | 0727-115 | 7 | 30 | 19.11 | -11 | 41  | 12.6 | PKS 0727-115        |
| d | 0733-174 | 7 | 35 | 45.81 | -17 | 35  | 48.5 | PKS 0733-174        |
| d | 0735+178 | 7 | 38 | 7.39  | 17  | 42  | 19.0 | OI158, PKS 0735+178 |
| d | 0738-674 | 7 | 38 | 56.50 | -67 | 35  | 50.8 | PKS 0738-674        |
| d | 0736+017 | 7 | 39 | 18.03 | 1   | 37  | 4.6  | PKS 0736+017        |
| d | 0738+313 | 7 | 41 | 10.70 | 31  | 12  | 0.2  | B2 0738+31          |
| d | 0743-673 | 7 | 43 | 31.61 | -67 | 26  | 25.5 | PKS 0743-673        |
| d | 0742+103 | 7 | 45 | 33.06 | 10  | 11  | 12.7 | PKS 0742+103        |
| d | 0743-006 | 7 | 45 | 54.08 | 0   | -44 | 17.5 | 4C-00.28            |
| d | 0743+259 | 7 | 46 | 25.87 | 25  | 49  | 2.1  |                     |
| d | 0745+241 | 7 | 48 | 36.11 | 24  | 0   | 24.1 | PKS 0745+241        |
| d | 0748+126 | 7 | 50 | 52.05 | 12  | 31  | 4.8  | PKS 0748+126        |
| d | 0749+540 | 7 | 53 | 1.38  | 53  | 52  | 59.6 | 4C+54.15            |
| d | 0754+100 | 7 | 57 | 6.64  | 9   | 56  | 34.9 | PKS 0754+100        |
| d | 0805-077 | 8 | 8  | 15.54 | -7  | 51  | 9.9  | PKS 0805-077        |
| d | 0804+499 | 8 | 8  | 39.67 | 49  | 50  | 36.5 | S4 0804+49          |
| d | 0805+410 | 8 | 8  | 56.65 | 40  | 52  | 44.9 | B3 0805+410         |
| d | 0808+019 | 8 | 11 | 26.71 | 1   | 46  | 52.2 | PKS 0808+019        |
| d | 0812+367 | 8 | 15 | 25.94 | 36  | 35  | 15.1 | B2 0812+36          |
| d | 0814+425 | 8 | 18 | 16.00 | 42  | 22  | 45.4 | S4 0814+42          |
| d | 0820+560 | 8 | 24 | 47.24 | 55  | 52  | 42.7 | 4CP56.16A           |
| d | 0821+394 | 8 | 24 | 55.48 | 39  | 16  | 41.9 | 4C+39.23            |
| d | 0823-500 | 8 | 25 | 26.87 | -50 | 10  | 38.5 | PKS 0823-500        |
| d | 0823+033 | 8 | 25 | 50.34 | 3   | 9   | 24.5 | PKS 0823+033        |
| d | 0823-223 | 8 | 26 | 1.57  | -22 | 30  | 27.2 | PKS 0823-223        |
| d | 0826-373 | 8 | 28 | 4.78  | -37 | 31  | 6.3  | PKS 0826-373        |
| d | 0827+243 | 8 | 30 | 52.09 | 24  | 10  | 59.8 | B2 0827+24          |
| d | 0829+046 | 8 | 31 | 48.88 | 4   | 29  | 39.1 | PKS 0829+046        |

|   | Name     |    |    | R.A.  |     | Dec. |      | Alias               |
|---|----------|----|----|-------|-----|------|------|---------------------|
| d | 0828+493 | 8  | 32 | 23.22 | 49  | 13   | 21.0 | S4 0828+49          |
| d | 0831+557 | 8  | 34 | 54.90 | 55  | 34   | 21.1 | 4C+55.16            |
| d | 0834-201 | 8  | 36 | 39.22 | -20 | 16   | 59.5 | PKS 0834-201        |
| d | 0833+585 | 8  | 37 | 22.41 | 58  | 25   | 1.8  | S4 0833+585         |
| d | 0836+710 | 8  | 41 | 24.36 | 70  | 53   | 42.2 | 4C+71.07            |
| d | 0839+187 | 8  | 42 | 5.09  | 18  | 35   | 41.0 | PKS 0839+187        |
| d | 0851+202 | 8  | 54 | 48.87 | 20  | 6    | 30.6 | OJ287, PKS 0851+202 |
| d | 0859-140 | 9  | 2  | 16.83 | -14 | 15   | 30.9 | PKS 0859-140        |
| d | 0859+470 | 9  | 3  | 3.99  | 46  | 51   | 4.1  | 4C+47.29            |
| d | 0906+015 | 9  | 9  | 10.09 | 1   | 21   | 35.6 | 4C+01.24            |
| d | 0912+029 | 9  | 14 | 37.91 | 2   | 45   | 59.2 | PKS 0912+029        |
| d | 0912+297 | 9  | 15 | 52.40 | 29  | 33   | 24.0 | B2 0912+29          |
| d | 0917+449 | 9  | 20 | 58.46 | 44  | 41   | 54.0 | S4 0917+44          |
| d | 0917+624 | 9  | 21 | 36.23 | 62  | 15   | 52.2 | S5 0917+62          |
| d | 0920-397 | 9  | 22 | 46.42 | -39 | 59   | 35.1 | PKS 0920-397        |
| d | 0923+392 | 9  | 27 | 3.01  | 39  | 2    | 20.9 | 4C39.25, 4C+39.25   |
| d | 0925-203 | 9  | 27 | 51.82 | -20 | 34   | 51.2 | PKS 0925-203        |
| d | 0945+408 | 9  | 48 | 55.34 | 40  | 39   | 44.6 | 4C+40.24            |
| d | 0953+254 | 9  | 56 | 49.88 | 25  | 15   | 16.1 | OK290, VRO 25.09.08 |
| d | 0955+476 | 9  | 58 | 19.67 | 47  | 25   | 7.8  | B3 0955+476         |
| d | 0955+326 | 9  | 58 | 20.95 | 32  | 24   | 2.2  | 3C232, 4C+32        |
| d | 0954+658 | 9  | 58 | 47.24 | 65  | 33   | 54.8 | S4 0945+65          |
| d | 1004+141 | 10 | 7  | 41.50 | 13  | 56   | 29.6 | PKS 1004+141        |
| d | 1011+250 | 10 | 13 | 53.43 | 24  | 49   | 16.4 | B2 1011+25          |
| d | 1012+232 | 10 | 14 | 47.07 | 23  | 1    | 16.6 | 4C+23.24            |
| d | 1020+400 | 10 | 23 | 11.57 | 39  | 48   | 15.4 | B3 1020+400         |
| d | 1021-006 | 10 | 24 | 29.59 | 0   | -52  | 55.5 | PKS 1021-006        |
| d | 1022+194 | 10 | 24 | 44.81 | 19  | 12   | 20.4 | 4C+19.34            |
| d | 1030+415 | 10 | 33 | 3.71  | 41  | 16   | 6.2  | VRO 10.41.03        |
| d | 1032-199 | 10 | 35 | 2.16  | -20 | 11   | 34.4 | PKS 1032-199        |
| d | 1034-293 | 10 | 37 | 16.08 | -29 | 34   | 2.8  | PKS 1034-293        |
| d | 1038+064 | 10 | 41 | 17.16 | 6   | 10   | 16.9 | 4C+06.41            |
| d | 1038+528 | 10 | 41 | 46.78 | 52  | 33   | 28.2 |                     |
| d | 1040+123 | 10 | 42 | 44.60 | 12  | 3    | 31.3 | 3C245, 4C+12.37     |
| d | 1039+811 | 10 | 44 | 23.06 | 80  | 54   | 39.4 | S5 1039+811         |
| d | 1042+071 | 10 | 44 | 55.91 | 6   | 55   | 38.3 | PKS 1042+071        |
| d | 1044+719 | 10 | 48 | 27.62 | 71  | 43   | 35.9 |                     |
| d | 1048-313 | 10 | 51 | 4.78  | -31 | 38   | 14.3 | PKS 1048-313        |
| d | 1049+215 | 10 | 51 | 48.79 | 21  | 19   | 52.3 | 4C+21.28            |
| d | 1053+704 | 10 | 56 | 53.62 | 70  | 11   | 45.9 |                     |

|   | Name     |    |    | R.A.  |     | Dec. |      | Alias               |
|---|----------|----|----|-------|-----|------|------|---------------------|
| d | 1053+815 | 10 | 58 | 11.53 | 81  | 14   | 32.7 |                     |
| d | 1055+018 | 10 | 58 | 29.61 | 1   | 33   | 58.8 | 4C+01.28            |
| d | 1057-797 | 10 | 58 | 43.31 | -80 | 3    | 54.2 | PKS 1057-797        |
| d | 1101-536 | 11 | 3  | 52.22 | -53 | 57   | 0.7  | PKS 1101-536        |
| d | 1104-445 | 11 | 7  | 8.69  | -44 | 49   | 7.6  | PKS 1104-445        |
| d | 1105-680 | 11 | 7  | 12.69 | -68 | 20   | 50.7 | PKS 1105-680        |
| d | 1111+149 | 11 | 13 | 58.69 | 14  | 42   | 27.0 | 4C-00.43            |
| d | 1116-462 | 11 | 18 | 26.96 | -46 | 34   | 15.0 | PKS 1116-462        |
| d | 1116+128 | 11 | 18 | 57.30 | 12  | 34   | 41.7 | 4C+12.39            |
| d | 1123+264 | 11 | 25 | 53.71 | 26  | 10   | 20.0 | PKS 1123+264        |
| d | 1124-186 | 11 | 27 | 4.39  | -18 | 57   | 17.4 | PKS 1124-186        |
| d | 1127-145 | 11 | 30 | 7.05  | -14 | 49   | 27.4 | PKS 1127-145        |
| d | 1128+385 | 11 | 30 | 53.28 | 38  | 15   | 18.6 | B3 1128+385         |
| d | 1130+009 | 11 | 33 | 20.06 | 0   | 40   | 52.8 | PKS 1130+009        |
| d | 1143-245 | 11 | 46 | 8.10  | -24 | 47   | 32.9 | PKS 1143-245        |
| d | 1144+402 | 11 | 46 | 58.30 | 39  | 58   | 34.3 | B3 1144+402         |
| d | 1144-379 | 11 | 47 | 1.37  | -38 | 12   | 11.0 | PKS 1144-379        |
| d | 1145-071 | 11 | 47 | 51.55 | -7  | 24   | 41.1 | PKS 1145-071        |
| d | 1148-001 | 11 | 50 | 43.87 | 0   | -23  | 54.2 | 4C-00.47            |
| d | 1148-671 | 11 | 51 | 13.43 | -67 | 28   | 11.1 | PKS 1148-671        |
| d | 1150+812 | 11 | 53 | 12.50 | 80  | 58   | 29.2 | S5 1150+812         |
| d | 1150+497 | 11 | 53 | 24.47 | 49  | 31   | 8.8  | 4C+49.22            |
| d | 1155+251 | 11 | 58 | 25.79 | 24  | 50   | 18.0 |                     |
| d | 1156-094 | 11 | 59 | 12.71 | -9  | 40   | 52.0 | PKS 1156-094        |
| d | 1156+295 | 11 | 59 | 31.83 | 29  | 14   | 43.8 | 4C+29.45            |
| d | 1213+350 | 12 | 15 | 55.60 | 34  | 48   | 15.2 | 4C+35.28            |
| d | 1215+303 | 12 | 17 | 52.08 | 30  | 7    | 0.6  | B2 1215+30          |
| d | 1216+487 | 12 | 19 | 6.41  | 48  | 29   | 56.2 | S4 1216+48          |
| d | 1219+285 | 12 | 21 | 31.69 | 28  | 13   | 58.5 | W Com               |
| d | 1219+044 | 12 | 22 | 22.55 | 4   | 13   | 15.8 | 4C+04.42            |
| d | 1221+809 | 12 | 23 | 40.49 | 80  | 40   | 4.3  |                     |
| d | 1222+037 | 12 | 24 | 52.42 | 3   | 30   | 50.3 | 4C+03.23            |
| d | 1226+373 | 12 | 28 | 47.42 | 37  | 6    | 12.1 |                     |
| d | 1228+126 | 12 | 30 | 49.42 | 12  | 23   | 28.1 | 3C274, M87, Virgo A |
| d | 1236+077 | 12 | 39 | 24.59 | 7   | 30   | 17.2 | PKS 1236+077        |
| d | 1236-684 | 12 | 39 | 46.65 | -68 | 45   | 30.9 | PKS 1236-684        |
| d | 1243-072 | 12 | 46 | 4.23  | -7  | 30   | 46.6 | PKS 1243-072        |
| d | 1244-255 | 12 | 46 | 46.80 | -25 | 47   | 49.3 | PKS 1244-255        |
| d | 1252+119 | 12 | 54 | 38.26 | 11  | 41   | 5.9  | PKS 1252+119        |

|   | Name     |    |    | R.A.  |     |    | Dec. | Alias               |
|---|----------|----|----|-------|-----|----|------|---------------------|
| d | 1251-713 | 12 | 54 | 59.92 | -71 | 38 | 18.4 | PKS 1251-713        |
| d | 1253-055 | 12 | 56 | 11.17 | -5  | 47 | 21.5 | 3C279, 4C-05.55     |
| d | 1255-316 | 12 | 57 | 59.06 | -31 | 55 | 16.8 | PKS 1255-316        |
| d | 1257+145 | 13 | 0  | 20.92 | 14  | 17 | 18.5 | PKS 1257+145        |
| d | 1302-102 | 13 | 5  | 33.01 | -10 | 33 | 19.4 | PKS 1302-102        |
| d | 1308+326 | 13 | 10 | 28.66 | 32  | 20 | 43.8 | AU CVn              |
| d | 1313-333 | 13 | 16 | 7.99  | -33 | 38 | 59.2 | PKS 1313-333        |
| d | 1315+346 | 13 | 17 | 36.49 | 34  | 25 | 15.9 | OP326, B2 1315+34A  |
| d | 1324+224 | 13 | 27 | 00.86 | 22  | 10 | 50.2 |                     |
| d | 1334-127 | 13 | 37 | 39.78 | -12 | 57 | 24.7 | PKS 1334-127        |
| d | 1338+381 | 13 | 40 | 22.95 | 37  | 54 | 43.8 |                     |
| d | 1342+662 | 13 | 43 | 45.96 | 66  | 2  | 25.8 |                     |
| d | 1342+663 | 13 | 44 | 8.68  | 66  | 6  | 11.7 |                     |
| d | 1347+539 | 13 | 49 | 34.66 | 53  | 41 | 17.0 | 1347+53, 4C+53.28   |
| d | 1349-439 | 13 | 52 | 56.53 | -44 | 12 | 40.4 | PKS 1349-439        |
| d | 1351-018 | 13 | 54 | 6.90  | -2  | 6  | 3.2  | PKS 1351-018        |
| d | 1354+195 | 13 | 57 | 4.44  | 19  | 19 | 7.4  | 4C+19.44            |
| d | 1354-152 | 13 | 57 | 11.24 | -15 | 27 | 28.8 | PKS 1354-152        |
| d | 1357+769 | 13 | 57 | 55.37 | 76  | 43 | 21.1 |                     |
| d | 1402-012 | 14 | 4  | 45.90 | -1  | 30 | 21.9 | PKS 1402-012        |
| d | 1402+044 | 14 | 5  | 1.12  | 4   | 15 | 35.8 | PKS 1402+044        |
| d | 1404+286 | 14 | 7  | 00.39 | 28  | 27 | 14.7 | OQ208, MRK 668      |
| d | 1406-076 | 14 | 8  | 56.48 | -7  | 52 | 26.7 | PKS 1406-076        |
| d | 1413+135 | 14 | 15 | 58.82 | 13  | 20 | 23.7 | PKS 1413+135        |
| d | 1416+067 | 14 | 19 | 8.18  | 6   | 28 | 34.8 | 3C298               |
| d | 1418+546 | 14 | 19 | 46.60 | 54  | 23 | 14.8 | S4 1418+54          |
| d | 1424-418 | 14 | 27 | 56.30 | -42 | 6  | 19.4 | PKS 1424-418        |
| d | 1430-178 | 14 | 32 | 57.69 | -18 | 1  | 35.2 | PKS 1430-178        |
| d | 1435+638 | 14 | 36 | 45.80 | 63  | 36 | 37.9 | S4 1435+63          |
| d | 1435-218 | 14 | 38 | 9.47  | -22 | 4  | 54.7 | PKS 1435-218        |
| d | 1442+101 | 14 | 45 | 16.47 | 9   | 58 | 36.1 | OQ172, PKS 1442+101 |
| d | 1443-162 | 14 | 45 | 53.38 | -16 | 29 | 1.6  | PKS 1443-162        |
| d | 1445-161 | 14 | 48 | 15.05 | -16 | 20 | 24.5 | PKS 1445-161        |
| d | 1448+762 | 14 | 48 | 28.78 | 76  | 1  | 11.6 |                     |
| d | 1451-375 | 14 | 54 | 27.41 | -37 | 47 | 33.1 | PKS 1451-375        |
| d | 1451-400 | 14 | 54 | 32.91 | -40 | 12 | 32.5 | PKS 1451-400        |
| d | 1458+718 | 14 | 59 | 7.58  | 71  | 40 | 19.9 | 3C309.1, 4C+71.15   |
| d | 1459+480 | 15 | 0  | 48.65 | 47  | 51 | 15.5 | 1459+48             |
| d | 1502+106 | 15 | 4  | 24.98 | 10  | 29 | 39.2 | PKS 1502+106        |
| d | 1502+036 | 15 | 5  | 6.48  | 3   | 26 | 30.8 | PKS 1502+036        |

|   | Name     |    |    | R.A.  |     |    | Dec. | Alias           |
|---|----------|----|----|-------|-----|----|------|-----------------|
| d | 1504+377 | 15 | 6  | 9.53  | 37  | 30 | 51.1 | B3 1504+377     |
| d | 1504-166 | 15 | 7  | 4.79  | -16 | 52 | 30.3 | PKS 1504-166    |
| d | 1510-089 | 15 | 12 | 50.53 | -9  | 5  | 59.8 | PKS 1510-089    |
| d | 1511-100 | 15 | 13 | 44.89 | -10 | 12 | 0.3  | PKS 1511-100    |
| d | 1514+197 | 15 | 16 | 56.80 | 19  | 32 | 13.0 | PKS 1514+197    |
| d | 1514-241 | 15 | 17 | 41.81 | -24 | 22 | 19.5 | AP Lib          |
| d | 1519-273 | 15 | 22 | 37.68 | -27 | 30 | 10.8 | PKS 1519-273    |
| d | 1532+016 | 15 | 34 | 52.45 | 1   | 31 | 4.2  | PKS 1532+016    |
| d | 1538+149 | 15 | 40 | 49.49 | 14  | 47 | 45.9 | 4C+14.60        |
| d | 1547+507 | 15 | 49 | 17.47 | 50  | 38 | 5.8  |                 |
| d | 1546+027 | 15 | 49 | 29.44 | 2   | 37 | 1.2  | PKS 1546+027    |
| d | 1548+056 | 15 | 50 | 35.27 | 5   | 27 | 10.5 | 4C+05.45        |
| d | 1549-790 | 15 | 56 | 58.87 | -79 | 14 | 4.3  | PKS 1549-790    |
| d | 1555+001 | 15 | 57 | 51.43 | 0   | -1 | 50.4 | PKS 1555+001    |
| d | 1600+335 | 16 | 2  | 7.26  | 33  | 26 | 53.1 |                 |
| d | 1604-333 | 16 | 7  | 34.76 | -33 | 31 | 8.9  | PKS 1604-333    |
| d | 1606+106 | 16 | 8  | 46.20 | 10  | 29 | 7.8  | 4C+10.45        |
| d | 1611+343 | 16 | 13 | 41.06 | 34  | 12 | 47.9 |                 |
| d | 1614+051 | 16 | 16 | 37.56 | 4   | 59 | 32.7 | PKS 1614+051    |
| d | 1610-771 | 16 | 17 | 49.28 | -77 | 17 | 18.5 | PKS 1610-771    |
| d | 1616+063 | 16 | 19 | 3.69  | 6   | 13 | 2.2  | PKS 1616+063    |
| d | 1619-680 | 16 | 24 | 18.44 | -68 | 9  | 12.5 | PKS 1619-680    |
| d | 1624+416 | 16 | 25 | 57.67 | 41  | 34 | 40.6 | 4C+41.32        |
| d | 1622-297 | 16 | 26 | 6.02  | -29 | 51 | 27.0 | PKS 1622-297    |
| d | 1633+382 | 16 | 35 | 15.49 | 38  | 8  | 4.5  |                 |
| d | 1637+574 | 16 | 38 | 13.46 | 57  | 20 | 24.0 | S4 1637+57      |
| d | 1638+398 | 16 | 40 | 29.63 | 39  | 46 | 46.0 | NRAO512         |
| d | 1642+690 | 16 | 42 | 7.85  | 68  | 56 | 39.8 | 4C+69.21        |
| d | 1641+399 | 16 | 42 | 58.81 | 39  | 48 | 37.0 | 3C345, 4C+39.48 |
| d | 1647-296 | 16 | 50 | 39.54 | -29 | 43 | 47.0 | PKS 1647-296    |
| d | 1652+398 | 16 | 53 | 52.22 | 39  | 45 | 36.6 | DA426, 4C+39.49 |
| d | 1656+348 | 16 | 58 | 1.42  | 34  | 43 | 28.4 |                 |
| d | 1655+077 | 16 | 58 | 9.01  | 7   | 41 | 27.5 | PKS 1655+077    |
| d | 1656+053 | 16 | 58 | 33.45 | 5   | 15 | 16.4 | PKS 1656+053    |
| d | 1657-261 | 17 | 0  | 53.15 | -26 | 10 | 51.7 | PKS 1657-261    |
| d | 1705+456 | 17 | 7  | 17.75 | 45  | 36 | 10.6 | 4C+45.34        |
| d | 1705+018 | 17 | 7  | 34.42 | 1   | 48 | 45.7 | PKS 1705+018    |
| d | 1706-174 | 17 | 9  | 34.35 | -17 | 28 | 53.4 |                 |
| d | 1717+178 | 17 | 19 | 13.05 | 17  | 45 | 6.4  | PKS 1717+178    |

|   | Name     |    |    | R.A.  |     |    | Dec. | Alias                 |
|---|----------|----|----|-------|-----|----|------|-----------------------|
| d | 1718-649 | 17 | 23 | 41.03 | -65 | 0  | 36.6 | NGC 6328              |
| d | 1726+455 | 17 | 27 | 27.65 | 45  | 30 | 39.7 | B3 1726+455           |
| d | 1727+502 | 17 | 28 | 18.62 | 50  | 13 | 10.5 | IIZW77                |
| d | 1725+044 | 17 | 28 | 24.95 | 4   | 27 | 4.9  | PKS 1725+044          |
| d | 1730-130 | 17 | 33 | 2.71  | -13 | 4  | 49.5 | NRAO530, PKS 1730-132 |
| d | 1732+389 | 17 | 34 | 20.58 | 38  | 57 | 51.4 | B3 1732+389           |
| d | 1738+476 | 17 | 39 | 57.13 | 47  | 37 | 58.4 | S4 1738+47            |
| d | 1739+522 | 17 | 40 | 36.98 | 52  | 11 | 43.4 | 4C+51.37              |
| d | 1741-038 | 17 | 43 | 58.86 | -3  | 50 | 4.6  | PKS 1741-038          |
| d | 1743+173 | 17 | 45 | 35.21 | 17  | 20 | 1.4  | PKS 1743+173          |
| d | 1745+624 | 17 | 46 | 14.03 | 62  | 26 | 54.7 | 4C+62.29              |
| d | 1749+701 | 17 | 48 | 32.84 | 70  | 5  | 50.8 | S5 1749+70            |
| d | 1749+096 | 17 | 51 | 32.82 | 9   | 39 | 0.7  | OT081, 4C+09.57       |
| d | 1751+441 | 17 | 53 | 22.65 | 44  | 9  | 45.7 | S4 1751+44            |
| d | 1751+288 | 17 | 53 | 42.47 | 28  | 48 | 4.9  |                       |
| d | 1803+784 | 18 | 0  | 45.69 | 78  | 28 | 4.0  | S5 1803+78            |
| d | 1800+440 | 18 | 1  | 32.32 | 44  | 4  | 21.9 | B3 1800+440           |
| d | 1807+698 | 18 | 6  | 50.68 | 69  | 49 | 28.1 | 3C371                 |
| d | 1815-553 | 18 | 19 | 45.40 | -55 | 21 | 20.7 | PKS 1815-553          |
| d | 1821+107 | 18 | 24 | 2.86  | 10  | 44 | 23.8 | PKS 1821+107          |
| d | 1823+568 | 18 | 24 | 7.07  | 56  | 51 | 1.5  | 4C+56.27              |
| d | 1830+285 | 18 | 32 | 50.19 | 28  | 33 | 36.0 | 4C+28.45              |
| d | 1831-711 | 18 | 37 | 28.71 | -71 | 8  | 43.6 | PKS 1831-711          |
| d | 1845+797 | 18 | 42 | 8.99  | 79  | 46 | 17.1 | 3C390.3, 4C+79.18     |
| d | 1842+681 | 18 | 42 | 33.64 | 68  | 9  | 25.2 |                       |
| d | 1849+670 | 18 | 49 | 16.07 | 67  | 5  | 41.7 | S4 1849+67            |
| d | 1856+736 | 18 | 54 | 57.30 | 73  | 51 | 19.9 |                       |
| d | 1901+319 | 19 | 2  | 55.94 | 31  | 59 | 41.7 | 3C395, 4C+31.52, 19   |
| d | 1908-201 | 19 | 11 | 9.65  | -20 | 6  | 55.1 | PKS 1908-201          |
| d | 1903-802 | 19 | 12 | 40.02 | -80 | 10 | 5.9  | PKS 1903-802          |
| d | 1920-211 | 19 | 23 | 32.19 | -21 | 4  | 33.3 |                       |
| d | 1921-293 | 19 | 24 | 51.06 | -29 | 14 | 30.1 | OV236, PKS 1921-293   |
| d | 1923+210 | 19 | 25 | 59.61 | 21  | 6  | 26.2 | PKS 1923+210          |
| d | 1928+738 | 19 | 27 | 48.50 | 73  | 58 | 1.6  | 4C+73.18              |
| d | 1925-610 | 19 | 30 | 6.16  | -60 | 56 | 9.2  | PKS 1925-610          |
| d | 1929+226 | 19 | 31 | 24.92 | 22  | 43 | 31.3 |                       |
| d | 1932+204 | 19 | 35 | 10.47 | 20  | 31 | 54.2 |                       |
| d | 1933-400 | 19 | 37 | 16.22 | -39 | 58 | 1.6  | PKS 1933-400          |
| d | 1936-155 | 19 | 39 | 26.66 | -15 | 25 | 43.1 | PKS 1936-155          |
| d | 1937-101 | 19 | 39 | 57.26 | -10 | 2  | 41.5 | PKS 1937-101          |



|   | Name     |    |    | R.A.  |     |    | Dec. | Alias               |
|---|----------|----|----|-------|-----|----|------|---------------------|
| d | 1935-692 | 19 | 40 | 25.53 | -69 | 7  | 57.0 | PKS 1935-692        |
| d | 1951+355 | 19 | 53 | 30.88 | 35  | 37 | 59.4 |                     |
| d | 1950-613 | 19 | 55 | 10.77 | -61 | 15 | 19.1 | PKS 1950-613        |
| d | 1954+513 | 19 | 55 | 42.74 | 51  | 31 | 48.5 | PKS 1954+513        |
| d | 1954-388 | 19 | 57 | 59.82 | -38 | 45 | 6.4  | PKS 1954-388        |
| d | 1958-179 | 20 | 0  | 57.09 | -17 | 48 | 57.7 | OV198, PKS 1958-179 |
| d | 2000-330 | 20 | 3  | 24.12 | -32 | 51 | 45.1 | PKS 2000-330        |
| d | 2007+777 | 20 | 5  | 31.00 | 77  | 52 | 43.2 | S5 2007+77          |
| d | 2005-489 | 20 | 9  | 25.39 | -48 | 49 | 53.7 | PKS 2005-489        |
| d | 2011-067 | 20 | 11 | 14.22 | -6  | 44 | 3.6  | OW-015              |
| d | 2008-159 | 20 | 11 | 15.71 | -15 | 46 | 40.3 | PKS 2008-159        |
| d | 2017+743 | 20 | 17 | 13.08 | 74  | 40 | 48.0 | 4C+74.25            |
| d | 2021+317 | 20 | 23 | 19.02 | 31  | 53 | 2.3  | 4C+31.56            |
| d | 2030+547 | 20 | 31 | 47.96 | 54  | 55 | 3.1  | 4C+54.42            |
| d | 2029+121 | 20 | 31 | 54.99 | 12  | 19 | 41.3 | PKS 2029+121        |
| d | 2037+511 | 20 | 38 | 37.04 | 51  | 19 | 12.7 | 3C418, 4C+51.42     |
| d | 2051+745 | 20 | 51 | 33.74 | 74  | 41 | 40.5 |                     |
| d | 2052-474 | 20 | 56 | 16.36 | -47 | 14 | 47.6 | PKS 2052-474        |
| d | 2059+034 | 21 | 1  | 38.83 | 3   | 41 | 31.3 | PKS 2059+034        |
| d | 2059-786 | 21 | 5  | 44.96 | -78 | 25 | 34.5 | PKS 2059-786        |
| d | 2106-413 | 21 | 9  | 33.19 | -41 | 10 | 20.6 | PKS 2106-413        |
| d | 2113+293 | 21 | 15 | 29.41 | 29  | 33 | 38.4 |                     |
| d | 2109-811 | 21 | 16 | 30.84 | -80 | 53 | 55.2 | PKS 2109-811        |
| d | 2126-158 | 21 | 29 | 12.18 | -15 | 38 | 41.0 | PKS 2126-158        |
| d | 2128-123 | 21 | 31 | 35.26 | -12 | 7  | 4.8  | PKS 2128-123        |
| d | 2131-021 | 21 | 34 | 10.31 | -1  | 53 | 17.2 | 4C-02.81            |
| d | 2136+141 | 21 | 39 | 1.31  | 14  | 23 | 36.0 | PKS 2136+141        |
| d | 2143-156 | 21 | 46 | 22.98 | -15 | 25 | 43.9 | PKS 2143-156        |
| d | 2144+092 | 21 | 47 | 10.16 | 9   | 29 | 46.7 | PKS 2144+092        |
| d | 2142-758 | 21 | 47 | 12.73 | -75 | 36 | 13.2 | PKS 2142-758        |
| d | 2145+067 | 21 | 48 | 5.46  | 6   | 57 | 38.6 | 4C+06.69            |
| d | 2149+056 | 21 | 51 | 37.88 | 5   | 52 | 13.0 | PKS 2149+056        |
| d | 2149-307 | 21 | 51 | 55.52 | -30 | 27 | 53.7 | PKS 2149-306        |
| d | 2146-783 | 21 | 52 | 3.15  | -78 | 7  | 6.6  | PKS 2146-783        |
| d | 2150+173 | 21 | 52 | 24.82 | 17  | 34 | 37.8 | PKS 2150+173        |
| d | 2152-699 | 21 | 57 | 5.98  | -69 | 41 | 23.7 |                     |
| d | 2155-152 | 21 | 58 | 6.28  | -15 | 1  | 9.3  | PKS 2155-152        |
| d | 2200+420 | 22 | 2  | 43.29 | 42  | 16 | 40.0 | VR422201, BL Lac    |
| d | 2201+315 | 22 | 3  | 14.98 | 31  | 45 | 38.3 | 4C+31.63            |
| d | 2204-540 | 22 | 7  | 43.73 | -53 | 46 | 33.8 | PKS 2204-540        |

|   | Name     |    |    | R. A. |     |    | Dec. | Alias            |
|---|----------|----|----|-------|-----|----|------|------------------|
| d | 2209+236 | 22 | 12 | 5.97  | 23  | 55 | 40.5 | PKS 2209+236     |
| d | 2216-038 | 22 | 18 | 52.04 | -3  | 35 | 36.9 | 4C-03.79         |
| d | 2223-052 | 22 | 25 | 47.26 | -4  | 57 | 1.4  | 3C446, 4C-05.92  |
| d | 2227-088 | 22 | 29 | 40.08 | -8  | 32 | 54.4 | PKS 2227-088     |
| d | 2229+695 | 22 | 30 | 36.47 | 69  | 46 | 28.1 | 2229+69          |
| d | 2227-399 | 22 | 30 | 40.28 | -39 | 42 | 52.1 | PKS 2227-399     |
| d | 2230+114 | 22 | 32 | 36.41 | 11  | 43 | 50.9 | CTA102, 4C+11.69 |
| d | 2232-488 | 22 | 35 | 13.24 | -48 | 35 | 58.8 | PKS 2232-488     |
| d | 2234+282 | 22 | 36 | 22.47 | 28  | 28 | 57.4 | B2 2234+28A      |
| d | 2233-148 | 22 | 36 | 34.09 | -14 | 33 | 22.2 | PKS 2233-148     |
| d | 2243-123 | 22 | 46 | 18.23 | -12 | 6  | 51.3 | PKS 2243-123     |
| d | 2245-328 | 22 | 48 | 38.69 | -32 | 35 | 52.2 | PKS 2245-328     |
| d | 2252-089 | 22 | 55 | 4.24  | -8  | 44 | 4.0  | PKS 2252-089     |
| d | 2253+417 | 22 | 55 | 36.71 | 42  | 2  | 52.5 | B3 2253+417      |
| d | 2254+024 | 22 | 57 | 17.56 | 2   | 43 | 17.5 | PKS 2254+024     |
| d | 2254+074 | 22 | 57 | 17.30 | 7   | 43 | 12.3 | PKS 2254+074     |
| d | 2255-282 | 22 | 58 | 5.96  | -27 | 58 | 21.3 | PKS 2255-282     |
| d | 2311-452 | 23 | 14 | 9.38  | -44 | 55 | 49.2 | PKS 2311-452     |
| d | 2312-319 | 23 | 14 | 48.50 | -31 | 38 | 39.5 | PKS 2312-319     |
| d | 2318+049 | 23 | 20 | 44.86 | 5   | 13 | 49.9 | PKS 2318+049     |
| d | 2319+272 | 23 | 21 | 59.86 | 27  | 32 | 46.4 | 4C+27.50         |
| d | 2320-035 | 23 | 23 | 31.95 | -3  | 17 | 5.0  | PKS 2320-035     |
| d | 2326-477 | 23 | 29 | 17.70 | -47 | 30 | 19.1 | PKS 2326-477     |
| d | 2328+107 | 23 | 30 | 40.85 | 11  | 0  | 18.7 | 4C+10.73         |
| d | 2329-384 | 23 | 31 | 59.48 | -38 | 11 | 47.7 | PKS 2329-384     |
| d | 2331-240 | 23 | 33 | 55.24 | -23 | 43 | 40.7 | PKS 2331-240     |
| d | 2335-027 | 23 | 37 | 57.34 | -2  | 30 | 57.6 | PKS 2335-027     |
| d | 2344+092 | 23 | 46 | 36.84 | 9   | 30 | 45.5 |                  |
| d | 2345-167 | 23 | 48 | 2.61  | -16 | 31 | 12.0 | PKS 2345-167     |
| d | 2351+456 | 23 | 54 | 21.68 | 45  | 53 | 4.2  | 4C+45.51         |
| d | 2351-154 | 23 | 54 | 30.19 | -15 | 13 | 11.2 | PKS 2351-154     |
| d | 2353-686 | 23 | 56 | 00.68 | -68 | 20 | 3.5  | PKS 2353-686     |
| d | 2355-534 | 23 | 57 | 53.27 | -53 | 11 | 13.7 | PKS 2355-534     |
| d | 2355-106 | 23 | 58 | 10.88 | -10 | 20 | 8.6  | PKS 2355-106     |
| c | 0002-478 | 0  | 4  | 35.66 | -47 | 36 | 19.6 | PKS 0002-478     |
| c | 0003+380 | 0  | 5  | 57.18 | 38  | 20 | 15.1 | 4C+38.02         |
| c | 0008-421 | 0  | 10 | 52.52 | -41 | 53 | 10.8 | PKS 0008-421     |
| c | 0022-423 | 0  | 24 | 42.99 | -42 | 2  | 4.0  | PKS 0022-423     |
| c | 0108+388 | 1  | 11 | 37.32 | 39  | 6  | 28.1 |                  |
| c | 0116+319 | 1  | 19 | 35.00 | 32  | 10 | 50.1 | 4C31.04          |

|   | Name     |    |    | R.A.  |     | Dec. |      | Alias                  |
|---|----------|----|----|-------|-----|------|------|------------------------|
| c | 0118-272 | 1  | 20 | 31.66 | -27 | 1    | 24.7 | PKS 0118-272           |
| c | 0138-097 | 1  | 41 | 25.83 | -9  | 28   | 43.7 | PKS 0138-097           |
| c | 0153-410 | 1  | 55 | 37.06 | -40 | 48   | 42.4 |                        |
| c | 0202-765 | 2  | 2  | 13.69 | -76 | 20   | 3.1  | PKS 0202-765           |
| c | 0237-027 | 2  | 39 | 45.47 | -2  | 34   | 40.9 |                        |
| c | 0241+622 | 2  | 44 | 57.70 | 62  | 28   | 6.5  |                        |
| c | 0252-712 | 2  | 52 | 46.16 | -71 | 4    | 35.3 |                        |
| c | 0317+188 | 3  | 19 | 51.26 | 19  | 1    | 31.3 |                        |
| c | 0334-546 | 3  | 35 | 53.92 | -54 | 30   | 25.1 | PKS 0334-546           |
| c | 0334+014 | 3  | 37 | 17.11 | 1   | 37   | 22.8 |                        |
| c | 0355-483 | 3  | 57 | 21.92 | -48 | 12   | 15.2 | PKS 0355-483           |
| c | 0355+508 | 3  | 59 | 29.75 | 50  | 57   | 50.2 | NRAO150, 4C+50.11      |
| c | 0400-319 | 4  | 2  | 21.27 | -31 | 47   | 25.9 |                        |
| c | 0403-132 | 4  | 5  | 34.00 | -13 | 8    | 13.7 | PKS 0403-132           |
| c | 0405-385 | 4  | 6  | 59.04 | -38 | 26   | 28.0 | PKS 0405-385           |
| c | 0405-123 | 4  | 7  | 48.43 | -12 | 11   | 36.7 |                        |
| c | 0407-658 | 4  | 8  | 20.38 | -65 | 45   | 9.1  | PKS 0407-658           |
| c | 0431-512 | 4  | 32 | 21.18 | -51 | 9    | 25.2 | PKS 0431-512           |
| c | 0503-608 | 5  | 4  | 1.70  | -60 | 49   | 52.5 | PKS 0503-608           |
| c | 0517-726 | 5  | 16 | 37.72 | -72 | 37   | 7.5  |                        |
| c | 0529+075 | 5  | 32 | 39.00 | 7   | 32   | 43.3 |                        |
| c | 0611+131 | 6  | 13 | 57.69 | 13  | 6    | 45.4 |                        |
| c | 0614-349 | 6  | 16 | 35.98 | -34 | 56   | 16.6 | PKS 0614-349           |
| c | 0615-365 | 6  | 17 | 32.32 | -36 | 34   | 14.8 | PKS 0615-365           |
| c | 0622-441 | 6  | 23 | 31.79 | -44 | 13   | 2.5  | PKS 0622-441           |
| c | 0647-475 | 6  | 48 | 48.45 | -47 | 34   | 27.2 | PKS 0647-475           |
| c | 0648-165 | 6  | 50 | 24.58 | -16 | 37   | 39.7 | PKS 0648-165           |
| c | 0700-465 | 7  | 1  | 34.55 | -46 | 34   | 36.6 | PKS 0700-465           |
| c | 0736-332 | 7  | 38 | 16.95 | -33 | 22   | 12.8 | PKS 0736-332           |
| c | 0809-493 | 8  | 11 | 8.80  | -49 | 29   | 43.5 | PKS 0809-493           |
| c | 0818-128 | 8  | 20 | 57.45 | -12 | 58   | 59.2 | PKS 0818-128           |
| c | 0842-754 | 8  | 41 | 27.04 | -75 | 40   | 27.9 | PKS 0842-754           |
| c | 0850+581 | 8  | 54 | 42.00 | 57  | 57   | 29.9 | 4C+58.17               |
| c | 0936-853 | 9  | 30 | 32.57 | -85 | 33   | 59.7 | PKS 0936-853           |
| c | 0952+179 | 9  | 54 | 56.82 | 17  | 43   | 31.2 | 0952+172, PKS 0952+179 |
| c | 0959-443 | 10 | 1  | 59.91 | -44 | 38   | 0.6  | PKS 0959-443           |
| c | 1038+529 | 10 | 41 | 48.90 | 52  | 33   | 55.6 |                        |
| c | 1045-188 | 10 | 48 | 6.62  | -19 | 9    | 35.7 | PKS 1045-188           |
| c | 1101-325 | 11 | 3  | 31.53 | -32 | 51   | 16.7 | PKS 1101-325           |
| c | 1117+146 | 11 | 20 | 27.81 | 14  | 20   | 55.0 | 4C+14.41               |

|   | Name     |    |    | R. A. |     |    | Dec. | Alias          |
|---|----------|----|----|-------|-----|----|------|----------------|
| c | 1128-047 | 11 | 31 | 30.52 | -5  | 0  | 19.7 | PKS 1128-047   |
| c | 1147+245 | 11 | 50 | 19.21 | 24  | 17 | 53.8 | B2 1147+24     |
| c | 1206-399 | 12 | 9  | 35.24 | -40 | 16 | 13.1 | PKS 1206-399   |
| c | 1213-172 | 12 | 15 | 46.75 | -17 | 31 | 45.4 | PKS 1213-172   |
| c | 1215-457 | 12 | 18 | 6.25  | -46 | 0  | 29.0 | PKS 1215-457   |
| c | 1221-829 | 12 | 24 | 54.38 | -83 | 13 | 10.1 | PKS 1221-829   |
| c | 1234-504 | 12 | 37 | 15.24 | -50 | 46 | 23.2 |                |
| c | 1307+121 | 13 | 9  | 33.93 | 11  | 54 | 24.6 | 4C+12.46       |
| c | 1320-446 | 13 | 23 | 4.25  | -44 | 52 | 33.8 | PKS 1320-446   |
| c | 1328+307 | 13 | 31 | 8.29  | 30  | 30 | 33.0 | 3C286,4C+30.26 |
| c | 1334-649 | 13 | 37 | 52.44 | -65 | 9  | 24.9 | PKS 1334-649   |
| c | 1409+218 | 14 | 11 | 54.86 | 21  | 34 | 23.4 |                |
| c | 1417+273 | 14 | 19 | 59.30 | 27  | 6  | 25.6 | 4C+27.28       |
| c | 1420+326 | 14 | 22 | 30.38 | 32  | 23 | 10.4 | B2 1420+32     |
| c | 1424+240 | 14 | 27 | 0.39  | 23  | 48 | 0.0  | PKS 1424+240   |
| c | 1432+200 | 14 | 34 | 39.79 | 19  | 52 | 0.7  | PKS 1432+200   |
| c | 1433+304 | 14 | 35 | 35.40 | 30  | 12 | 24.5 |                |
| c | 1540-828 | 15 | 50 | 59.14 | -82 | 58 | 6.8  | PKS 1540-828   |
| c | 1555-140 | 15 | 58 | 21.95 | -14 | 9  | 59.1 |                |
| c | 1656+477 | 16 | 58 | 2.78  | 47  | 37 | 49.2 | S4 1656+47     |
| c | 1733-565 | 17 | 37 | 35.77 | -56 | 34 | 3.2  | PKS 1733-565   |
| c | 1740-517 | 17 | 44 | 25.45 | -51 | 44 | 43.8 | PKS 1740-517   |
| c | 1748-253 | 17 | 51 | 51.26 | -25 | 24 | 0.1  |                |
| c | 1758-651 | 18 | 3  | 23.50 | -65 | 7  | 36.8 | PKS 1758-651   |
| c | 1814-637 | 18 | 19 | 35.00 | -63 | 45 | 48.2 | PKS 1814-637   |
| c | 1817-254 | 18 | 20 | 57.85 | -25 | 28 | 12.6 |                |
| c | 1829-718 | 18 | 35 | 37.20 | -71 | 49 | 58.2 | PKS 1827-718   |
| c | 1936-623 | 19 | 41 | 21.77 | -62 | 11 | 21.1 | PKS 1936-623   |
| c | 1943+228 | 19 | 46 | 6.25  | 23  | 0  | 4.4  |                |
| c | 1955+335 | 19 | 57 | 40.55 | 33  | 38 | 27.9 |                |
| c | 2005+403 | 20 | 7  | 44.95 | 40  | 29 | 48.6 |                |
| c | 2023+336 | 20 | 25 | 10.84 | 33  | 43 | 0.2  |                |
| c | 2037-253 | 20 | 40 | 8.77  | -25 | 7  | 46.7 | PKS 2037-253   |
| c | 2048+312 | 20 | 50 | 51.13 | 31  | 27 | 27.4 | CL4            |
| c | 2054-377 | 20 | 57 | 41.60 | -37 | 34 | 3.0  | PKS 2054-377   |
| c | 2058-425 | 21 | 1  | 59.11 | -42 | 19 | 16.2 | PKS 2058-425   |
| c | 2115-305 | 21 | 18 | 10.60 | -30 | 19 | 11.6 | PKS 2115-305   |
| c | 2155-304 | 21 | 58 | 52.06 | -30 | 13 | 32.1 | PKS 2155-304   |
| c | 2210-257 | 22 | 13 | 2.50  | -25 | 29 | 30.1 | PKS 2210-257   |

|   | Name     |    |    | R. A. |     | Dec. |      | Alias             |
|---|----------|----|----|-------|-----|------|------|-------------------|
| c | 2211-388 | 22 | 14 | 38.57 | -38 | 35   | 45.0 | PKS 2211-388      |
| c | 2259-374 | 23 | 2  | 23.89 | -37 | 18   | 6.8  | PKS 2259-374      |
| c | 2300-307 | 23 | 3  | 5.82  | -30 | 30   | 11.5 | PKS 2300-307      |
| c | 2320+506 | 23 | 22 | 25.98 | 50  | 57   | 52.0 |                   |
| c | 2325-150 | 23 | 27 | 47.96 | -14 | 47   | 55.8 | PKS 2325-150      |
| c | 2329-162 | 23 | 31 | 38.65 | -15 | 56   | 57.0 | PKS 2329-162      |
| c | 2333-528 | 23 | 36 | 12.14 | -52 | 36   | 22.0 | PKS 233-528       |
| o | 0019+000 | 0  | 22 | 25.43 | 0   | 14   | 56.1 | 4C+00.02          |
| o | 0024+348 | 0  | 26 | 41.73 | 35  | 8    | 42.3 | OB338             |
| o | 0036-216 | 0  | 38 | 29.90 | -21 | 20   | 5.0  | PKS 0036-216      |
| o | 0218+357 | 2  | 21 | 5.47  | 35  | 56   | 13.7 |                   |
| o | 0218+35A | 2  | 21 | 5.47  | 35  | 56   | 13.7 |                   |
| o | 0218+35B | 2  | 21 | 5.47  | 35  | 56   | 14.1 |                   |
| o | 0237-233 | 2  | 40 | 8.17  | -23 | 9    | 15.7 |                   |
| o | 0250+178 | 2  | 53 | 34.88 | 18  | 5    | 42.5 |                   |
| o | 0316+413 | 3  | 19 | 48.16 | 41  | 30   | 42.1 | 3C84,PerA,NGC1275 |
| o | 0335-122 | 3  | 37 | 55.56 | -12 | 4    | 12.5 |                   |
| o | 0336-017 | 3  | 39 | 0.80  | -1  | 33   | 7.0  |                   |
| o | 0411+054 | 4  | 14 | 37.59 | 5   | 34   | 46.2 |                   |
| o | 0420-625 | 4  | 20 | 56.13 | -62 | 23   | 39.7 |                   |
| o | 0428+205 | 4  | 31 | 3.76  | 20  | 37   | 34.3 |                   |
| o | 0430+052 | 4  | 33 | 11.10 | 5   | 21   | 15.6 | 3C120, BW Tau     |
| o | 0434+299 | 4  | 38 | 4.91  | 30  | 4    | 32.4 |                   |
| o | 0454-463 | 4  | 55 | 51.27 | -46 | 15   | 58.1 |                   |
| o | 0515-674 | 5  | 15 | 37.54 | -67 | 21   | 27.8 |                   |
| o | 0537-692 | 5  | 36 | 57.06 | -69 | 13   | 24.7 |                   |
| o | 0558-504 | 5  | 59 | 46.82 | -50 | 26   | 52.6 | PKS 0558-504      |
| o | 0629+104 | 6  | 32 | 15.33 | 10  | 22   | 2.2  | 4C+10.20          |
| o | 0710+439 | 7  | 13 | 38.16 | 43  | 49   | 17.2 | S4 0710+43        |
| o | 0727-365 | 7  | 29 | 5.39  | -36 | 39   | 45.1 |                   |
| o | 0902+343 | 9  | 5  | 30.11 | 34  | 7    | 57.2 | B2 0902+34        |
| o | 0919-260 | 9  | 21 | 29.35 | -26 | 18   | 43.4 | PKS 0919-260      |
| o | 0941-080 | 9  | 43 | 36.95 | -8  | 19   | 30.9 | PKS 0941-080      |
| o | 0954+556 | 9  | 57 | 38.17 | 55  | 22   | 58.0 | 4C+55.17          |
| o | 1031+567 | 10 | 35 | 7.04  | 56  | 28   | 46.8 | S4 1031+56        |
| o | 1226+023 | 12 | 29 | 6.70  | 2   | 3    | 8.6  | 3C273B,4C+02.32   |
| o | 1245-197 | 12 | 48 | 23.90 | -19 | 59   | 18.7 | PKS 1245-197      |
| o | 1323+321 | 13 | 26 | 16.51 | 31  | 54   | 9.5  |                   |
| o | 1328+254 | 13 | 30 | 37.69 | 25  | 9    | 11.0 | 4C+25.43          |
| o | 1329-665 | 13 | 32 | 37.55 | -66 | 46   | 50.1 |                   |

|   | Name     |    |    | R. A. |     | Dec. |      | Alias               |
|---|----------|----|----|-------|-----|------|------|---------------------|
| o | 1345+125 | 13 | 47 | 33.36 | 12  | 17   | 24.2 | 4C+12.50            |
| o | 1352-104 | 13 | 52 | 6.84  | -10 | 26   | 21.3 | PKS 1352-104        |
| o | 1355-416 | 13 | 59 | 0.18  | -41 | 52   | 52.6 | PKS 1355-416        |
| o | 1421-490 | 14 | 24 | 32.30 | -49 | 13   | 49.0 | PKS 1421-178        |
| o | 1511+238 | 15 | 13 | 40.19 | 23  | 38   | 35.2 | 4C+23.41            |
| o | 1607+268 | 16 | 9  | 13.32 | 26  | 41   | 29.0 | CTD93, PKS 1607+268 |
| o | 1622-253 | 16 | 25 | 46.89 | -25 | 27   | 38.3 | PKS 1622-253        |
| o | 1634+628 | 16 | 34 | 33.80 | 62  | 45   | 35.9 | 3C343, 4C+62.26     |
| o | 1637+626 | 16 | 38 | 28.20 | 62  | 34   | 44.3 | 3C343.1, 4C+63.27   |
| o | 1709-342 | 17 | 13 | 9.91  | -34 | 18   | 28.9 |                     |
| o | 1710-269 | 17 | 13 | 31.25 | -26 | 58   | 52.3 |                     |
| o | 1710-323 | 17 | 13 | 50.79 | -32 | 26   | 12.0 |                     |
| o | 1714-336 | 17 | 17 | 36.00 | -33 | 42   | 8.2  |                     |
| o | 1741-312 | 17 | 44 | 23.58 | -31 | 16   | 36.0 |                     |
| o | 1756-663 | 18 | 1  | 18.08 | -66 | 23   | 1.0  | PKS 1756-663        |
| o | 1813-241 | 18 | 16 | 49.60 | -24 | 5    | 59.2 |                     |
| o | 1826+796 | 18 | 23 | 14.11 | 79  | 38   | 49.0 |                     |
| o | 1827-360 | 18 | 30 | 58.88 | -36 | 2    | 30.2 | PKS 1827-360        |
| o | 1829-106 | 18 | 32 | 20.84 | -10 | 35   | 11.3 |                     |
| o | 1830-211 | 18 | 33 | 39.90 | -21 | 3    | 40.0 | PKS 1830-210        |
| o | 1830-21A | 18 | 33 | 39.89 | -21 | 3    | 40.7 |                     |
| o | 1830-21B | 18 | 33 | 39.94 | -21 | 3    | 40.0 |                     |
| o | 1848+333 | 18 | 50 | 4.79  | 33  | 21   | 45.8 |                     |
| o | 1855+031 | 18 | 58 | 2.34  | 3   | 13   | 16.4 |                     |
| o | 1934+207 | 19 | 36 | 48.02 | 20  | 51   | 36.8 |                     |
| o | 1934-638 | 19 | 39 | 25.03 | -63 | 42   | 45.6 | PKS 1934-638        |
| o | 1947+079 | 19 | 50 | 5.54  | 8   | 7    | 14.0 | PKS 1947+079        |
| o | 2021+614 | 20 | 22 | 6.68  | 61  | 36   | 58.8 | S4 2021+61          |
| o | 2027+383 | 20 | 28 | 54.11 | 38  | 32   | 47.7 |                     |
| o | 2044-168 | 20 | 47 | 19.66 | -16 | 39   | 5.8  | PKS 2044-168        |
| o | 2100+468 | 21 | 2  | 17.04 | 47  | 2    | 16.2 |                     |
| o | 2121+053 | 21 | 23 | 44.52 | 5   | 35   | 22.1 | OX036, PKS 2121+053 |
| o | 2128+048 | 21 | 30 | 32.88 | 5   | 2    | 17.5 | PKS 2128+048        |
| o | 2134+004 | 21 | 36 | 38.59 | 0   | 41   | 54.2 |                     |
| o | 2251+158 | 22 | 53 | 57.75 | 16  | 8    | 53.6 | 3C454.3, 4C+15.76   |
| o | 2310-417 | 23 | 12 | 55.61 | -41 | 26   | 56.1 | PKS 2310-417        |
| o | 2314+038 | 23 | 16 | 35.09 | 4   | 5    | 19.8 | 2314+03, 4C+03.57   |
| o | 2322-411 | 23 | 25 | 3.42  | -40 | 51   | 30.1 | PKS 2322-411        |
| o | 2337+264 | 23 | 40 | 29.03 | 26  | 41   | 56.8 |                     |
| o | 2352+495 | 23 | 55 | 9.46  | 49  | 50   | 8.3  | S4 2352+49          |

**Résolution n° B5 sur le Groupe de Travail Reference Frames** (Voir annexe pp. 27-42 de ces Transactions)

proposée par les participants au Symposium n° 166

La XXIIe Assemblée Générale de l'Union Astronomique Internationale

**Considérant** que le Groupe de travail sur les Repères de Référence composé de membres des Commissions 4, 8, 19, 24 et 31, du Service International de la Rotation de l'Heure (IERS) et d'autres experts du domaine a été formé pour dresser une liste de sources radio extra galactiques potentielles destinées à définir le nouveau repère de référence et de sources secondaires susceptibles d'être ajoutées ou de remplacer ultérieurement les sources primaires,

**Notant** qu'une liste des sources qui définissent le repère de référence conventionnel et comprenant également une liste de sources possibles qui pourraient, ultérieurement, être ajoutées aux ou remplacer les sources déterminées ont été établies,

**Recommande** que ces listes de sources de définition soient adoptées par la XXIIe Assemblée Générale (1994) comme première étape de la définition d'un nouveau repère de référence, et

**Demande** que le Groupe de Travail sur les Repères de Référence soit maintenu et que sa composition soit révisée par les Commissions 4, 8, 19, 24 et 31 et l'IERS de façon à

1. définir les positions des radio sources sur la liste
2. déterminer la relation de ce repère à un repère optique défini par des étoiles et,
3. recommander à la XXIIIe Assemblée Générale de l'UAI (1997) qu'une procédure soit instaurée qui permette d'organiser le travail de mise à jour et d'évolution de ce repère et son application à d'autres longueurs d'onde.

**Resolution n° B6 on the Second Generation of the STScI Guide Star Catalog**

proposed by the participants of IAU Symposium n° 166

The XXIIInd General Assembly of the International Astronomical Union

**Taking** into account the immense importance to the entire astronomical community of the STScI's Guide Star Catalog (GSC),

**Taking** into account the expected characteristics of the proposed GSC-II project,

**Taking** into account the expected implications of the availability of the GSC-II for countless applications in ground-based and space-based astrometry over the coming decades,

**Taking** into account the anticipated distribution of compressed second-generation plate scans to the astronomical community, and

**Taking** into account the scientific and technical competence at STScI, the availability of the plate material and digitizing facilities, and the team's willingness to undertake the GSC-II project,

**Urges** NASA and other relevant national and international funding agencies to do their utmost to ensure the necessary funding for timely completion of the second-generation plate scanning and the construction of the GSC-II at STScI, and urges the international community to engage in broadening the support and in pursuing derivative collaborative projects.

**Resolution n° B6 sur la seconde génération du Catalogue d'Etoiles Guide du STScI**

proposée par les participants au Symposium n° 166

La XXII<sup>e</sup> Assemblée Générale de l'Union Astronomique Internationale

**Prenant en compte** l'importance considérable pour l'ensemble de la communauté astronomique du Catalogue d'Etoiles Guide du STScI (GSC),

**Prenant en compte** les caractéristiques prévues du projet GSC II proposé,

**Prenant en compte** les implications prévisibles de la disponibilité de GSC-II pour des applications innombrables dans l'astrométrie au sol et spatiale durant les prochaines décades,

**Prenant en compte** la distribution anticipée de balayages de plaques de seconde génération compressées auprès de la communauté astronomique, et

**Prenant en compte** les compétences scientifiques et techniques existant au STScI, l'existence d'équipements destinés au traitement des plaques, la disponibilité de moyens en calcul digital et la volonté de l'équipe d'entreprendre le projet GSC-II,

**Demande instamment** à la NASA et tout autre agence de financement compétente nationale et internationale de faire leur possible pour assurer le financement nécessaire pour l'accomplissement en temps voulu du balayage par plaques de seconde génération ainsi que l'élaboration de GSC-II, et encourage la communauté internationale à se mobiliser en élargissant son soutien et en poursuivant les projets de collaboration qui en découlent.

#### **Resolution n° B7 on the Need to develop sub-milliarcsecond optical Astrometry**

proposed by the participants in Symposium n° 166

The XXII<sup>nd</sup> General Assembly of the International Astronomical Union

**Considering** that the Symposium 166 has discussed the many aspects of Solar System, Galactic and Extragalactic Astronomy and Astrophysics requiring high accuracy optical astrometry,

**Emphasizes** the strong need for sub-milliarcsecond accuracy astrometric data for very large numbers of stars,

**Notes** that satellite options have been proposed, orders of magnitude more accurate and productive than the very successful HIPPARCOS/TYCHO missions,

**Urges** the Space Agencies to study the possibilities of sub-milliarcsecond optical projects as soon as possible, taking advantage of the present high level of expertise and dedication.

#### **Résolution n° B7 sur le besoin de développer l'astrométrie optique submillimétrique**

proposée par les participants au Symposium n° 166

La XXII<sup>e</sup> Assemblée Générale de l'Union Astronomique Internationale

**Considérant** que le Symposium 166 ayant examiné les divers aspects de l'Astronomie du Système Solaire, galactique et extragalactique et l'Astrophysique exigeant une astrométrie optique de haute précision,

**Souligne** le besoin aigu de données astrométriques d'une précision de l'ordre de la "sub-milliarcsecond" pour un très grand nombre d'étoiles

**Note** que des options de satellites ont été proposées d'ordres de magnitude plus précis et plus productifs que les missions HIPPARCOS/TYCHO par ailleurs très réussies,

**Demande instamment** aux Agences Spatiales d'étudier les possibilités de projets optiques "submilliarcsecond" dès que possible, en tirant profit du niveau actuel élevé de compétence et de dévouement.



**Resolution n° B8 on a Joint Working Group of IAU and IUGG on the Non-Rigid Earth Nutation**

proposed by Commissions 4, 7 & 19

The XXII<sup>nd</sup> General Assembly of the International Astronomical Union

**Recognising**

1. that an accepted geophysical nutation theory for the non-rigid Earth with oceans and atmosphere, including all known effects at the one tenth milliarsecond level, is not yet available and requires further study,
2. that the observations of the Earth's nutation provide useful information about the physics of the Earth's interior

**Establishes** an inter-commission Working Group on the non-rigid Earth Nutation Theory to be organized by the Presidents of Commissions 4, 7 & 19, under the leadership of V. Dehant, and

**Invites** the IUGG to join the IAU in sponsoring this Working Group in order to form a joint IAU/IUGG Working Group on this topic.

*IUGG International Union of Geodesy & Geophysics*

**Résolution n° B8 sur la création d'un Groupe de Travail commun IAU/IUGG sur la nutation de la terre non-rigide**

proposée par les Commissions 4, 7 & 19

La XXII<sup>e</sup> Assemblée Générale de l'Union Astronomique Internationale

**Constatant**

1. qu'une théorie de la nutation géophysique reconnue pour la Terre non-rigide avec ses océans et son atmosphère, intégrant tout les effets connus au dixième de milliarc de seconde, n'est pas encore disponible et demande des études complémentaires,
2. que les observations de la nutation de la Terre fournissent des informations utiles sur la physique de l'intérieur de la Terre,

**Instaure** un groupe de travail inter-commissions sur la Théorie de la Nutation de la Terre non-rigide qui sera organisé par les Présidents des Commissions 4, 7 & 19, sous la direction de V. Dehant, et

**Invite** l'IUGG à se joindre à l'IAU en parrainant ce Groupe de travail pour former un Groupe de Travail commun IAU/IUGG sur ce thème.

**Resolution n° B9 on the Policy with respect to Hazardous Near-Earth Objects**

proposed by the Joint Working Group on Near Earth Objects

The XXII<sup>nd</sup> General Assembly of the International Astronomical Union

**Recognising:**

1. that cosmic impact by comets and minor planets is an environmentally significant phenomenon which has played a major role in the evolution of life on Earth,
2. that our current knowledge of the quality, distribution and actual orbits of NEO, is very limited,
3. that an inventory of NEO, as complete as possible with present techniques, is best achieved through a cooperative, internationally coordinated program of observation and data collection,

4. that the IAU, and specifically its Working Group on NEO's, is the only international body currently involved in this field, whereas several national communities are ready to plan operations, therefore

**Recommends** that the WGNEO be continued as a Working Group of the Solar System Division- in order:

1. to encourage and assist with coordination of national initiatives,
2. to prepare, within 3 years, an assessment of the relative merits and defects of places for these searches,
3. to invite other scientific organizations, such as COSPAR, IUGG, etc., to join IAU in this effort,
4. to foster and encourage dissemination of accurate information on the nature and extent of the NEO hazard,
5. to report back, to the XXIIIrd General Assembly in 1997, on the status of this activity.

*COSPAR Committee on Space Research*

*IUGG International Union of Geodesy & Geophysics*

#### **Résolution N° B9 sur la police en matière d'objets hasardeux à proximité de la Terre**

proposée par le Groupe de Travail commun sur les Objets à proximité de la terre (NEO)

La XXIIe Assemblée Générale de l'Union Astronomique Internationale

##### **Reconnaisant**

1. que l'impact cosmique par les comètes et les planètes mineures est un phénomène d'environnement significatif qui a joué un rôle majeur dans l'évolution de la Vie sur Terre,
2. que notre connaissance actuelle de la qualité, de la distribution et des orbites exactes des NEO est très limitée,
3. qu'un inventaire des NEO aussi complet que possible par les techniques actuelles sera mieux effectué par un programme international commun d'observations et de collecte de données

**Recommande** que le WGNEO soit continué -en tant que Groupe de Travail de la division Système Solaire- afin

1. d'encourager et aider la coordination des initiatives nationales
2. de préparer, à échéance de 3 ans, une évaluation des mérites et défauts respectifs des études entreprises,
3. d'inviter d'autres organisations scientifiques, telles que COSPAR, IUGG, etc... à se joindre à l'UAI dans cette entreprise
4. de stimuler et d'encourager la dissémination d'une information exacte sur la nature et l'importance des NEO hasardeux
5. de rapporter, lors de la XXIIIe Assemblée Générale en 1997, l'état de cette activité.

#### **Resolution n° B10 on the Preservation of Astronomical Relics**

proposed by Commission 41

The XXIIInd General Assembly of the International Astronomical Union

**Considering** the scientific, historical and practical importance of the measurement of the arc of meridian made by F.G.W. Struve,

**Urges** the Executive Committee of the IAU to approach the governments of the following countries: Norway, Sweden, Finland, Estonia, Latvia, Lithuania, Ukraine, Belarus, Poland and Moldavia, which still possess relics of that enterprise, with a view to taking all possible steps to preserve those relics, including an approach to UNESCO to declare them to be world-heritage sites.

*UNESCO United Nations Educational, Scientific and Cultural Organization*

**Résolution n° B10 sur la protection des vestiges astronomiques**

proposée par la Commission 41

La XXIIe Assemblée Générale de l'Union Astronomique Internationale

**Considérant** l'importance scientifique, historique et pratique de la mesure de l'arc du méridien faite par F.G.W. Struve,

**Demande instamment** au Comité Exécutif de l'UAI de se mettre en relation avec les gouvernements des pays suivants : Norvège, Suède, Finlande, Estonie, Lettonie, Lituanie, Ukraine, Bélorussie, Pologne et Moldavie, lesquels possèdent encore des vestiges de cette entreprise, en vue de prendre toutes les mesures possibles pour protéger ces vestiges, y compris par l'approche de l'UNESCO afin de les déclarer sites d'héritage mondial.

**Resolution n° B11 on the Continuation and Extension of the activities of the Working Group on Astronomical Standards (WGAS)**

proposed by the Working Group on Astronomical Standards (in which Commissions 4, 5, 8, 19, 24 & 31 participate) at the occasion of JD n° 14

The XXIIInd General Assembly of the International Astronomical Union

**Considering** that the interchangeability of observational data, whether processed or not, requires the widespread use of a common set of constants and algorithms that implement standard models used in fundamental astronomy,

**Recommends that**

1. the IAU Working Group on Astronomical Standards (WGAS) continue permanently and assume the responsibility for establishing and maintaining a set of constants, algorithms, and procedures,
2. the IAU WGAS identify single center at a suitable institution, under a worldwide reviewing board, to organize, maintain, and distribute electronically the set of constants, algorithms, and procedures, and
3. the center, and the IAU WGAS coordinate their activities with the IERS and the IAG.

*IERS International Earth Rotation Service*

*IAG International Association of Geodesy*

**Résolution n° B11 sur la continuation et l'extension des activités du Groupe de Travail sur les Standards Astronomiques (WGAS)**

proposée par le Groupe de Travail sur les Standards Astronomiques (commun au Commissions 4, 5, 8, 19, 24 & 31) lors de la Joint Discussion n° 14

La XXIIe Assemblée Générale de l'Union Astronomique Internationale

**Considérant** que l'interchangeabilité des données observationnelles, tant exploitées que non exploitées, requiert l'utilisation généralisée d'un ensemble de constantes et

d'algorithmes communs qui s'appliquent aux modèles standards utilisés en astronomie fondamentale

**Recommande que**

1. le Groupe de Travail sur les standards Astronomiques (WGAS) soit maintenu de façon permanente et assume la responsabilité de l'établissement et de la mise à jour d'un ensemble de constantes, d'algorithmes et de procédures;
2. le WGAS de l'UAI identifie un centre unique au sein d'une institution adéquate, sous la responsabilité d'un bureau d'experts mondial, pour organiser, mettre à jour et distribuer électroniquement l'ensemble des constantes, algorithmes et procédures; et
3. ce centre et le WGAS de l'UAI coordonnent leurs activités avec l'IERS et l'IAG.

**Resolution n° B12 on an Inter-Union Working Group concerning Millimeter and Submillimeter Astronomy**

proposed by Commission 40

The XXII<sup>nd</sup> General Assembly of the International Astronomical Union

**Considering**

- a. the strong scientific case for a large millimetre/submillimetre telescope array with an order of magnitude greater sensitivity and resolution than any of the existing facilities,
- b. the need for innovative technical developments to realise such a facility at a reasonable cost,
- c. the need for international collaboration in order to realise such an instrument,
- d. the existence of the URSI Commission J Working group in this domain,

**Resolves** to seek an Inter-Union Working Group with similar terms of reference, namely:

1. to study the main scientific objectives in millimetre/submillimetre astronomy for the early 2000s,
2. to coordinate and evaluate the radio seeing data for site evaluation and observing strategy,
3. to study new designs for telescopes and instrumentation,
4. to investigate potential international partnerships.

*URSI      Union Radio Scientifique Internationale*

**Resolution n° B12 sur un Groupe de Travail Inter-Unions concernant l'astronomie millimétrique et submillimétrique**

proposée par la Commission 40

La XXII<sup>e</sup> Assemblée Générale de l'Union Astronomique Internationale

**Considérant**

- a. le besoin essentiel d'un ensemble de grands télescopes millimétriques et submillimétriques de sensibilité et de résolution d'un ordre de magnitude plus grand que tous ceux existants,
- b. le besoin de développement de techniques innovatives pour réaliser un tel instrument à un coût raisonnable,
- c. le besoin d'une collaboration internationale pour réaliser un tel instrument,

d. l'existence du groupe de travail de la Commission J de l'URSI dans ce domaine, décide de demander au Comité Exécutif de l'UAI l'établissement d'un Groupe de Travail Inter-Unions ayant les mêmes buts, à savoir :

1. l'étude des objectifs scientifiques principaux en astronomie millimétrique et submillimétrique
2. la coordination et l'évaluation des données "seeing" radio pour l'évaluation de sites et la stratégie d'observation
3. l'étude de nouvelles conceptions de télescopes et d'instrumentations
4. l'investigation de partenaires internationaux potentiels.

**Resolution n° B13 on an Inter-Union Working Group concerning a Large Radiotelescope proposed by Commission 40**

The XXIIInd General Assembly of the International Astronomical Union

**Considering**

- a. the strong scientific case for a new, internationally accessible radiotelescope with one to two orders of magnitude greater sensitivity than that of any existing or planned facility,
- b. the need for innovative technical developments to realize such a facility at an affordable price,
- c. the need for international collaboration to allow realization of this facility,
- d. the existence of an URSI Commission J Working Group with the same terms of reference,

**Resolves** to ask the Executive Committee of the IAU to seek an Inter-Union Working Group with the following terms of reference:

1. to explore the range of scientific problems to be addressed by the instrument,
2. to discuss the technical specifications and general design considerations needed to maximize the scientific return of such a facility,
3. to identify and, in so far as possible, resolve the major technical challenges to realization of an affordable radiotelescope with the required sensitivity.

*URSI      Union Radio Scientifique Internationale*

**Résolution n° B13 sur un Groupe de Travail Inter-Unions concernant un grand radiotélescope**

proposée par la Commission 40

La XXIIe Assemblée Générale de l'Union Astronomique Internationale

**Considérant**

- a. le besoin essentiel d'un nouveau radiotélescope d'accès international d'une sensibilité d'un ou deux ordre(s) de magnitude plus grand(s) que tous ceux existants ou dont la construction est prévue,
- b. le besoin de développements de techniques innovatives pour réaliser un tel instrument à un coût raisonnable,
- c. le besoin d'une collaboration internationale pour réaliser un tel instrument,
- d. l'existence du groupe de travail de la Commission J de l'URSI dans ce domaine,

décide de demander au Comité Exécutif de l'UAI l'établissement d'un Groupe de Travail Inter-Unions ayant les buts suivants :

1. l'étude des problèmes scientifiques à résoudre par l'instrument,
2. l'étude des spécifications techniques et des considérations conceptuelles générales à prendre en considération pour optimiser les retombées scientifiques d'un tel équipement,
3. l'identification et, dans la mesure du possible, la résolution des défis techniques majeurs permettant la réalisation d'un radiotélescope à un coût raisonnable offrant la sensibilité requise.

**Resolution n° B14 on considering the Sharing of the Hydroxyl Band with Land Mobile Satellite Services**

proposed by Commission 40

The XXIIInd General Assembly of the International Astronomical Union

**Recognising**

- a. that the 1660-1660.5 MHz band is allocated to the Radio Astronomy Service on a shared, primary basis, and is used to observe hydroxyl lines, which are of the highest astrophysical importance, in many galaxies in the nearby Universe,
- b. that the World Administrative Radio Conference for the Mobile Services (WARC MOB-87) has also allocated the 1660-1660.5 MHz band to the land mobile satellite service,
- c. that WARC MOB-87 has added Footnote 730A to the Radio Regulations, allowing administrations to authorize aircraft stations and ship stations to communicate with space stations in the land mobile satellite service in the 1660-1660.5 MHz band,
- d. that ITU-R Study Group 8 has established Working Party 8D to study, among other characteristics of mobile satellite systems, the necessary criteria for frequency sharing between the various mobile satellite systems and other services allocated the same bands,

**Urges**

1. that IUCAF, in representation of the International Astronomical Union interact, as a matter of urgency, with Working Party 8D and with Working Party 7D to work out the necessary criteria under which the radio astronomy service, and the land mobile satellite service and services authorized under Footnote 730, may share the 1660-1660.5 MHz band,
2. that IUCAF make it clear to Working Party 8D that sharing between radio astronomy stations and aircraft stations is not possible when aircraft are above the horizon of a radio astronomy observatory,
3. that administrations adhering to the International Astronomical Union and to the International Telecommunication Union bear in mind at the next competent WARC the importance of the primary allocation to the radio astronomy service in the band 1660-1660.5 MHz,

**and instructs** the Executive Committee of the IAU to request the Director of ITU-R to bring this Resolution to the attention of the Chairman of Working Party 8D.

*ITU*            *International Telecommunication Union*  
*IUCAF*        *Inter-Union Commission on Frequency Allocations for Radio Astronomy and Space Sciences*

**Resolution n° B14 sur le partage de la bande hydroxyle avec les services mobiles au sol**  
proposée par la Commission 40

La XXIIe Assemblée Générale de l'Union Astronomique Internationale

**Considérant**

- a. que la bande 1600-1660.5 MHz est attribuée au Service de la Radioastronomie sur une base de priorité et de partage et qu'elle est utilisée pour l'observation des raies de l'hydroxyle qui sont de la plus grande importance astrophysique dans de nombreuses galaxies appartenant à l'Univers proche ;
- b. que la Conférence Administrative Mondiale des Radiocommunications pour les services mobiles (WARC MOB-87) a aussi attribué la bande 1660-1660.5 MHz aux services mobiles au sol associés aux satellites
- c. que la WARC MOB-87 a ajouté la note 730A aux Réglementations Radio, permettant ainsi aux administrations d'autoriser les stations embarquées sur avion ou sur bateau de communiquer avec les stations spatiales par des services mobiles dans la bande ;
- d. que le Groupe d'Etude 8 de l'IT-R a mis en place le Working Party 8D pour étudier, entre autres caractéristiques des systèmes de satellites mobiles, les critères nécessaires au partage de bande de fréquence entre les différents systèmes de satellites mobiles et les autres services qui se voient allouées les mêmes bandes.

**Recommande de façon pressante**

1. que l'IUCAF, en qualité de représentant de l'Union Astronomique Internationale interagisse de toute urgence avec le Working Party 8D et le Working Party 7D pour dégager les critères nécessaires au partage de la bande 1660-1660.5 MHz par le Service de Radioastronomie et les services mobiles au sol associés aux satellites et les services autorisés par la note 730;
2. que l'IUCAF informe clairement le Working Party 8D que le partage entre les stations radioastronomiques et les stations aéronautiques n'est pas possible quand les aéronefs sont au-dessus de l'horizon d'un observatoire radioastronomique;
3. que les administrations adhérant à l'Union Astronomique Internationale et à l'Union Internationale des Télécommunications aient en mémoire, lors de la prochaine WRC concernée, l'importance d'attribuer en premier au Service de la Radioastronomie la bande 1660-1660.5 MHz.

et invite le Comité Exécutif de l'Union Astronomique Internationale à demander au Directeur de l'UTI-R de porter cette résolution à l'attention du Président du WP8D.

**Resolution n° B15 concerning the Bands to be used for Radiocommunications in the lunar environment**

proposed by Commissions 40 & 50

The XXIIInd General Assembly of the International Astronomical Union

**Considering**

- a. that radiocommunication systems between the Moon and the Earth, on the surface of the Moon, and in the surrounding environment of the Moon, are expected to be required in support of space research activities, including radio astronomy observations,
- b. that some radiocommunication will be required in the shielded zone of the Moon (szm) as defined by RR ARTICLE 29, Sect VI,

- c. that by the use of certain radio frequency bands the requirements for such radiocommunication can be accommodated while at the same time providing the protection for radio astronomy intended by RR ARTICLE 29, Sect IV,
- d. that in the szm it is necessary to preserve as much of the spectrum as possible free of emissions,
- e. that in assigning frequencies to the necessary transmissions it is important to avoid bands that:
  - i. are of great astronomical importance,
  - ii. are difficult to observe from Earth because of interference or absorption in the atmosphere or ionosphere,
  - iii. are important for interferometry between the Earth and the Moon,
- f. that the bands mentioned in (e) include:
  - i. all frequencies below 2 GHz,
  - ii. frequencies of the most important spectral lines (IAU list) with bandwidth to cover essential red and blue shifts,
  - iii. radio astronomy allocations used on Earth for continuum observations with allowance for greater bandwidth to improve sensitivity,

#### **Recommends**

- 1. that two alternative bands be allocated to the necessary active services in the szm to retain access by the passive services to the whole spectrum on a time-coordinated basis,
- 2. that radiocommunication in the shielded zone of the Moon be limited to the band 2000-3000 MHz,
- 3. that an alternative frequency band at least 1 GHz wide be identified to permit future operations on a time-coordinated basis between radio astronomy and lunar communication systems

#### **Resolution n° B15 sur les bandes destinées à l'utilisation à des fins de radiocommunication dans l'environnement lunaire**

proposée par la Commission 40

La XXIIe Assemblée Générale de l'Union Astronomique Internationale

#### **Considérant**

- a. que ses systèmes de radio communication entre la Lune et la Terre, à la surface de la Lune, et dans l'environnement proche de la Lune seront nécessaires à l'accomplissement des activités de recherche spatiale, incluant les observations radioastronomiques;
- b. que des communications radio seront nécessaires dans la zone de protection (szm) définie par RR article 29, Sec. IV;
- c. que l'utilisation de certaines bandes de fréquence radio peuvent répondre aux demandes de ces radiocommunications tout en fournissant une protection pour la radioastronomie telle que prévue par RR article 29, Sect. IV;
- d. que dans la szm il faut préserver d'émissions le spectre autant que faire se peut;



- e. qu'en assignant des fréquences aux transmissions nécessaires il est important d'éviter les bandes qui:
  - i. sont d'un grand intérêt astronomique,
  - ii. sont difficiles à observer depuis la Terre en raison d'interférences ou d'absorption dans l'atmosphère ou l'ionosphère,
  - iii. sont importantes pour l'interférométrie entre la Terre et la Lune;
- f. que les bandes mentionnées en (e) comprennent:
  - i. toutes les fréquences en-dessous de 2 GHz,
  - ii. les fréquences des raies spectrales les plus importantes (liste IAU) avec une largeur de bande couvrant les décalages essentiels vers le rouge et le bleu,
  - iii. les allocations radioastronomiques utilisées sur Terre pour des observations continues permettant une largeur de bande plus grande afin d'améliorer la sensibilité;

#### Recommande

1. que deux bandes alternatives soient attribuées aux services actifs concernés de la szm afin de maintenir l'accès au spectre entier sur une base de coordonnées de temps;
2. que les radiocommunications dans la zone protégée de la Lune soit limitées à la bande 2000-3000 MHz;
3. que la bande de fréquence alternative d'une largeur minimale de 1 GHz soit identifiée pour permettre les opérations à venir sur une base de coordonnées de temps entre la radioastronomie et les systèmes de communication lunaires.

#### Resolution n° B16 concerning the International Decade of Solar Cycle Studies (IDSCS)

proposed by Commission 10

The XXIIInd General Assembly of the International Astronomical Union

**Taking into account the fact that** previous long term solar programs focused mainly on the years around minimum or maximum, and did not cover a full cycle for observing solar-terrestrial phenomena, whereas understanding of solar cyclic periodicity requires study of its various manifestations over an entire activity cycle,

**that** space missions (e.g. SOHO) and major ground-based projects (GONG) planned for the late 1990's into the early 2000's promise important achievements in solar-terrestrial studies,

**and that** according to its Constitution, one of the main tasks of SCOSTEP is to organize and coordinate STP programs of interest to, and approved by, at least two of the ICSU Participating Bodies,

**adopts** the proposed project with the preliminary name IDSCS -International Decade of Solar Cycle Studies- aimed at the study of specific solar-terrestrial phenomena during the entire 23rd solar cycle, with special emphasis on the main phases of the cycle,

**and recommends** that SCOSTEP take all necessary actions to organize the Project for the term 1997-2007.

*ICSU International Council for Scientific Unions  
SCOSTEP Scientific Committee on Solar-Terrestrial Physics*

**Résolution n° B16 sur la Décade Internationale des Etudes du Cycle Solaire (IDSCS)**

proposée par la Commission 10

La XXIIe Assemblée Générale de l'Union Astronomique Internationale

**Prenant en compte** que les précédents programmes solaires à long terme portaient principalement sur les années proches du minimum ou du maximum et ne couvraient pas un cycle complet pour l'observation des phénomènes soleil-terre, alors que la compréhension de la périodicité cyclique solaire requiert une étude de ses diverses manifestations sur un cycle entier d'activité;

les missions spatiales (e.g. SOHO) et les projets majeurs au sol (GONG) prévus pour la fin des années 1990 et le début des années 2000 promettent d'importants résultats dans les études soleil-terre,

**et que** selon ses Statuts, l'une des principales tâches de SCOSTEP est d'organiser et coordonner les programmes STP intéressants et approuvés par au moins 2 organismes adhérent à l'ICSU,

adopte le projet soumis sous le nom provisoire de IDSCS (International Decade of Solar Cycle Studies) destiné à l'étude des phénomènes spécifiques terre-soleil durant la totalité du 23e cycle solaire, avec un intérêt plus particulier pour les phases principales du cycle,

**et recommande** que SCOSTEP prenne toutes les mesures possibles pour organiser le projet pour la période 1997-2007.

**16c. Cover Resolution**

*Finally, the Resolutions Committee has adopted a global resolution, B17, covering the other resolutions, number C1 to C8, and submits this resolution, which I shall now read, to a vote:*

**Resolution B17, covering the ensemble of the resolutions proposed by the Commissions, by their Working Groups, or in the course of their collaborative work in the Symposia or Joint Discussions organized by the Commissions**

The XXIInd General Assembly of the International Astronomical Union,

**having** complete confidence in its Commissions and in their working groups, especially with regard to the conclusions resulting from their collaborative work in Symposia and Joint Discussions,

Approves the resolutions submitted by those communities to the Resolutions Committee, the text of them follows.

*Before the vote on Resolution B17, I shall read the titles of Resolutions C1 to C8, covered by Resolution B17:*

- C1: On observations of the offset of the celestial pole and an empirical nutation model for practical use, proposed by the participants in JD n°19 organised by Commissions 4, 7, 19, 24 & 31 of the IAU.*
- C2: On the use of J.2000.0 equinox coordinates in announcements of Supernova discoveries, proposed by Commission 28 and its Working Group on Supernovae.*
- C3: On the preservation of Julian Day Numbers, proposed by Commissions 26, 27, 30, and 42 of the IAU.*
- C4: On research and inventory of existing archives, proposed by Commission 41 of the IAU.*

- C5: *Concerning comet designations and names, proposed by Commission 20 of the IAU.*
- C6: *On the use of the 1976 system of Astronomical Constants, proposed by the Working Group on Astronomical Standards.*
- C7: *On the definition of J2000.0 and time scales, proposed by the Working Group on Astronomical Standards.*
- C8: *Concerning Space VLBI, proposed by Commission 40.*

**Resolution n° B17 portant sur les Résolutions de catégorie C proposées au Comité des Résolutions**

La XXIIe Assemblée Générale de l'Union Astronomique Internationale

Accordant une entière confiance à ses Commissions et à leurs groupes de travail, notamment aux conclusions résultant de leurs travaux communs au sein de symposiums ou de discussions communes,

Souscrit aux résolutions soumises par ces groupes au Comité des Résolutions, résolutions et dont la liste est donnée ci-dessus (C1 à C8).

*I should like to conclude by expressing my thanks to the Members of the Resolutions Committee, Professors McCarthy, Sahade, Smak, Wayman and Yallop; to our official translators, Drs. Janet Rountree and Roger Cayrel; to IAU secretariat, especially to Mrs Monique Léger-Orine; and to the Local Organizing Committee, in particular to Dr. Theo Jurriens.*

*Thank you for attention and for your votes,*

*J.-C. Pecker, Dank U!*

**16d. Resolutions proposed by the Commissions, their Working Groups, Symposia or Joint Discussions**

**Resolution n° C1 on observations of the offset of the celestial pole and the an empirical nutation model for practical use.**

The participants in JD n°19 between Commissions 4, 7, 19, 24 & 31, of the International Astronomical Union

**Recognising**

1. that there are requirements to relate the J2000.0-celestial ephemeris pole (CEP) as defined by the 1980 IAU Theory of Nutation to the International Earth Rotation Service (IERS) CEP at J2000.0,
2. that the IERS provides accurate estimates of the offsets between these two poles,
3. that Very Long Baseline Interferometry (VLBI) and Lunar Laser Ranging (LLR) observations used by the IERS provide the most accurate data; and

**Considering**

1. that a long series of observational data is required to separate long-period nutations in longitude from precession, and long-period nutations in obliquity from obliquity rate, and to provide an improved estimate of precession, but
2. that there is an urgent need for an improved nutation numerical series for practical purposes;

**Urges** that observations of the offset of the celestial pole with respect to the pole defined by the 1980 IAU Theory of Nutation be made with the most precise techniques available including laser ranging to the Moon and very long baseline interferometry; and

**Asks** the International Earth Rotation Service to provide an empirical model for corrections to the 1980 IAU Theory of Nutation to be used for a priori estimates of the celestial ephemeris pole offsets.

#### **Resolution n° C2 on the Use of J2000.0 Equinox Coordinates in Announcements of SN Discoverers**

Commission 28 of the IAU, and its Working Group on Supernovae

**Recognising** that most astronomical observations are now proposed, scheduled, and reported in the new FK5/J.2000.0 equinox coordinates,

**Recommends** that discoveries of new extragalactic supernovae, in so far as possible, report the position of their discoveries in these coordinates, and

**Requests** that IAU circulars and other official IAU publications record extragalactic supernova positions in J.2000.0 coordinates, beginning with SN 1995 A.

#### **Resolution n° C3 on the Preservation of Julian Day Numbers**

Commissions 26, 27, 30 & 42 of the International Astronomical Union

**Recognising** that a uniquely-defined zero point and scale of astronomical time underpin all current and archived data on variable phenomena, whether periodic, cyclical, or stochastic; and

**Recognising also** that variable-star phenomena account for a significant fraction of all such information; and

**Recognising further** that a unique time scale and zero point do exist with undiminished value in the Julian Day Numbers defined in 1582, which time system has in the 20th century already driven into disuse that of Nova Era Astronomica;

**Noting** that the Julian Day Numbers are already available for use in a shorter, truncated form, where needed;

**Do deplore** the introduction of the Modified Julian Day system on the supposed basis of economy and of global distribution of night-time and day-time observatories, especially since its close resemblance to Julian Day Numbers is very confusing to the users

**Therefore recommend** the rescinding of resolution n°4 of the XVth General Assembly of the IAU that established the Modified Julian Day system;

**and recommend** the continuing use of the Julian Day Numbers as the basis for performing, archiving, and exchanging all time-based calculations pertaining to astronomical phenomena with unambiguous continuity from the past into the indefinite future.

**Resolution n° C4 on Search for and Inventory of Existing Archives**

Commission 41

**Noting** that Prof. Blaauw's recent "History of the IAU" shows the great value of astronomical archives,

**Encourages** a search for and inventory for all archives related to the history of the IAU, to be undertaken by members at their home institutions and other places and reported to Commission 41.

**Resolution n° C5 concerning Comet Designations and Names**

Commission 20 of the of the International Astronomical Union

**1. Considering that**

- a. there is essentially a 1:1 correspondence between the provisional (year/letter) and definitive (year/Roman numeral) designation systems for comets;
- b. the procedure for interpolating old discoveries of comets into the existing designation systems is unsatisfactory, particularly when orbit determinations are not available;
- c. the application of a new designation at each return of a periodic comet to perihelion is an unnecessary complication, particularly when the comet's recovery can be described as "routine", or for the rapidly increasing numbers of periodic comets that are followed all around their orbits; and
- d. there can be confusion as to whether a newly-discovered object is a comet or a minor planet,

**Proposes** to replace the present designation systems for comets with a system that closely resembles, but is not identical to, the designation systems for minor planets.

2. Specifically, it is resolved that the year/letter and year/Roman numeral systems be replaced by one in which each cometary discovery is given a designation consisting of the year of observation, the upper-case code letter identifying the half month of observation during that year according to the procedure used for minor planets, and a consecutive numeral to indicate the order of discovery announcement during that half month. Each new designation shall be supplied by the IAU Central Bureau for Astronomical Telegrams when the discovery is announced in one of its Circulars. For example, the third comet reported as discovered during the second half of February 1995 would be designated 1995 D3.
3. The nature of an object can further be indicated by an initial prefix. In particular, such prefixes should be applied in cases where comets possibly have been misdesignated as minor planets, or vice versa. If necessary, the prefix "A/" would precede a comet designation that actually refers to a minor planet (or asteroid). For comets the acceptable prefixes are "P/" for a periodic comet (defined to have a revolution period of less than 200 years or confirmed observations at more than one perihelion passage) and "C/" for a comet that is not periodic (in this sense), with the addition of "X/" for a comet for which a meaningful orbit can not be computed and "D/" for a periodic comet that no longer exists or is deemed to have disappeared.

4. If a comet is observed to return (or have its periodicity established by observation through aphelion or from identifications), one "P/" (or "D/") shall be preceded by an official sequential number (e.g. 1P/Halley), to be maintained by the Minor Planet Center and published in the Minor Planet Circulars. Subsequent recoveries shall be acknowledged with further designations only when the predictions are particularly uncertain.
5. The practice of providing future predictions for the returns to perihelion of all periodic comets for which there is a reasonable chance for future observations will continue. While this currently means, for example, the publication of predictions for the comets for the year  $n$  in the batch of Minor Planet Circulars for May of the year  $n-3$ , the elements being for one 40-day date closest to perihelion passage, it is to be expected that this process will be supplemented -and perhaps eventually supplanted- by one that provides the orbital elements or "more" comets routinely at epochs 200 days apart, as in the case of minor planets.
6. In the case of a comet that has separated into discrete components, those components should be distinguished by appendix "A", "B", etc., to the designation (or to the "P/" or "D/" periodic comet number).
7. Noting that some redundancy of nomenclature is desirable, it is proposed to retain in general terms the tradition of naming comets for their discoverers. In this framework, a committee has been formed to establish more precise procedures to ensure fairness and simplicity.
8. It is proposed that comet names be announced in the IAU Circulars only following consultation between the Central Bureau for Astronomical Telegrams and the Commission 20 Committee on Names of Small Bodies .
9. Whereas the new designation system for comets implies the possibility of confusion (if incorrect spacing is used) with that for new planetary satellites, it is proposed to indicate satellites with the prefix "S/".
10. It is proposed that the new designation system for comets be introduced at the beginning of the year 1995. In the interest of avoiding confusion and maintaining continuity, Roman-numeral designation will be published in the Minor Planet Circular for pre-1995 comet discoveries/recoveries passing perihelion in 1993 and 1994, and new-style designations will be supplied for pre-1995 comets, together with lists of correlations with both the year/letter and the year/Roman numeral systems.

#### Resolution n° C6 on the Use of the 1976 System of Astronomical Constants

The IAU Working Group on Astronomical Standards and was adopted by the members of the Commissions 4, 5, 8, 19, 24 & 31, participating in Joint Discussion n° 14,

#### Considering that

1. the present 1976 System of Astronomical Constants provides a stable standard for the consistent reduction of observations; but
2. the present system is inadequate for up-to-date, full, modern-day accuracy; and
3. IAU Resolution A4 (1991) explicitly introduces the theory of General Relativity as the theoretical background for the definition of the celestial space-time reference frames;

**Recommend that**

1. the present 1976 IAU System of Astronomical Constants be retained;
2. an IAU File of Current Best Estimates of Astronomical Constants be established in accordance with the report of the IAU WGAS;
3. a sub-working group be appointed by the IAU WGAS to provide definitions of the astronomical units, of the quantities linking these astronomical units to the units of the International System (SI), and of other astronomical quantities, compatible with the theory of General Relativity.

**Resolution n° C7 on the Definition of J2000.0 and Time Scales**

The IAU Working Group on Astronomical Standards and was adopted by the members of the Commissions 4, 5, 8, 19, 24 & 31, participating in Joint Discussion n° 14,

**Considering that**

1. the IAU has recommended the use of time-like arguments, barycentric Coordinate Time (TCB), Geocentric Coordinate Time (TCG) and Terrestrial Time (TT);
2. the accuracy of the determination of sidereal time has significantly improved in recent years; and
3. there is the need for a well-defined realization of a uniform time scale prior to the establishment of TAI;

**Recommends that**

1. the event (epoch) J2000.0 be defined at the geocenter and at the date 2000 January 1.5 TT = Julian date 2451545.0 TT;
2. the Julian century be defined as 36525 days of TT;
3. beginning with February 26, 1997 (date subject to change based on additional information), the relationship between Greenwich Mean Sidereal Time (GMST) and Greenwich Apparent Sidereal Time (GAST), shall be:

$$\text{GAST} = \text{GMST} + \text{Dpsi} \cos \text{eps}0 + 0'' .00264 \sin \text{Omega} + 0.000063 \sin 2 \text{Omega}$$

where Dpsi is the nutation in longitude, eps0 is the mean obliquity of the ecliptic, and Omega is the longitude of the lunar node;

4. When possible new ephemerides should be developed in terms of the time-like arguments, ICB, ICG and a system of astronomical constants consistent with these relativistic time-like arguments;
5. TT is to be extended back prior to 1955 as a continuous time-like argument; and
6. when values of Delta T (=TT-UT) are given, the dependence upon the basis for the determination be specified, along with the means of properly correcting the values.

**Resolution n° C8 concerning Space VLBI****Commission 40****Considering**

- a. that Space VLBI is an effort to extend the interferometer baselines beyond the diameter of the Earth, and that the first successful experiment was done in 1986/87, demonstrating the feasibility and scientific potential,
- b. that success of such projects depends critically on the four basic elements: space antenna(s), satellite tracking and data link stations, ground observing telescopes and correlation and image processing facilities,

**Noting**

- a. that two major projects, VSOP and RadioAstron, are in progress with planned launch dates of 1996 and 1997, respectively,
- b. that a large network of co-observing ground telescopes is required,
- c. that coordination with existing ground radio telescopes is being sought by the URSI Global VLBI Working Group,
- d. that considerable time on correlators and data processing facilities will be necessary for analysing the data produced,
- e. that a large investment is being made to arrange the satellite tracking and data link stations,

**Urges** every possible support for the Space Missions, especially for the co-observing ground telescopes and the operation of correlation and data processing facilities, including hardware for providing cross-compatibility between existing data acquisition systems.

## **17. Appointment of the Special Nominating Committee (SNC) 1994-1997**

The President asked the General Secretary to announce the names of the members proposed for appointment by the General Assembly to the Special Nominating Committee 1994-1997. These persons will be convened by the President of the IAU for the purpose of proposing names to the XXIIIrd General Assembly (1997) for IAU Executive Committee membership (1997-2000). The four persons appointed are:

|              |               |
|--------------|---------------|
| B. Gustafson | <i>Sweden</i> |
| B.G. Marsden | <i>USA</i>    |
| M. Rees      | <i>UK</i>     |
| G. Swarup    | <i>India</i>  |

The member of the SNC appointed by the Executive Committee is:

|                    |               |
|--------------------|---------------|
| S. Torres-Peimbert | <i>Mexico</i> |
|--------------------|---------------|

These appointments were unanimously confirmed by the General Assembly.

Note: The President and past President are members of the SNC *ex officio*. The General Secretary and Assistant General Secretary are consultants to the SNC.



## 18. Nomination of New National and individual Members of the Union

### New National Members

Following Statutes 7 of the IAU, Cuba and Irak are no longer members of the Union. However, considering the difficulties, the Executive Committee proposes to offer them the Statute of Associate Member. This proposal is accepted by the General Assembly.

In agreement with the practice of ICSU, Georgia is accepted as full member.

### Individual Members

A list of the new members of the IAU, as proposed by the Adhering Organizations, is posted.

## 19. IAU Representatives to other ICSU & International Institutions (1994-1997)

| Acronyms      | Organisation   | Representative(s)  |
|---------------|--|--|
| ICSU          | International Council of Scientific Unions<br>General Committee  | <i>J. Andersen</i>   |
| BIPM/<br>CCDS | Bureau International des Poids et Mesures<br>International Consultative Committee<br>for the Definition of the Second<br>Application of General Relativity<br>to Metrology | <i>G. Winkler</i><br><br>T. Fukushima  |
| CCIR          | International Radio Consultative Committee<br>Study Group 2  | <i>J. Whiteoak/<br/>A.R. Thompson</i>  |
| CIE           | Compagnie Internationale de l'Eclairage  | <i>S. Isobe</i>  |
| CODATA        | Committee for Data for Science & Technology  | <i>E. Raymond</i>  |
| COSPAR        | Committee on Space Research<br>COSPAR SC B<br>COSPAR SC D<br>COSPAR SC E<br>COSPAR Sub. Committee E1<br>COSPAR Sub. Committee E2   | <i>I. Appenzeller<br/>C. de Bergh<br/>F. Verheest<br/>W. Wamsteker<br/>R. Sunyaev<br/>O. Engvold</i> |
| COSTED        | Committee on Science & Technology<br>in Developing Countries   | <i>I. Appenzeller</i>  |
| CTS           | Committee on the Teaching of Science   | <i>J. Pasachoff</i>  |
| FAGS          | Federation of Astronomical<br>& Geophysical Services   | <i>P. Pâquet<br/>E. Tandberg-Hanssen</i>   |
| IAF           | International Astronautical Federation   | <i>Y. Kondo</i>  |
| IERS          | International Earth Rotation Service   | <i>B. Kolaczek</i>   |
| IGBP          | International Geosphere-Ionospehre<br>Programme  | <i>J. Eddy</i>   |

|                |  |  |
|----------------|--|--|
| <b>IUCAF</b>   | Inter-Union Commission on Frequency Allocation for Radio Astronomy & Space Science | <i>B.A. Doubinsky<br/>M. Ishiguro<br/>R. Sinha<br/>A.R. Thompson</i> |
| <b>IUPAP</b>   | International Union of Pure & Applied Physics                                      | <i>V. Trimble</i>  |
| <b>IUWDS</b>   | International Ursigram & World Day Service   | <i>H. Coffey</i>   |
| <b>QBSA</b>    | Quarterly Bulletin on Solar Activity   | <i>P. Lantos</i>   |
| <b>SCOPE</b>   | Scientific Committee on Problems of Environment                                    | <i>D. McNally</i>  |
| <b>SCOSTEP</b> | Scientific Committee on Solar-Terrestrial Physics                                  | <i>B. Schmieder</i>  |
| <b>URSI</b>    | Union Radio-Scientifique Internationale  | <i>R. Eckers</i>   |
| <b>WMO</b>     | World Meteorological Union   | <i>G. Wallerstein</i>  |

## **20. Place and Date of the XXIIIrd General Assembly**

The President called upon Prof. D. Sugimoto to present the invitation of Japan, for the XXIIIrd General Assembly to be held in Kyoto.

The General Assembly accepted this invitation with acclamation and the President asked Prof. D. Sugimoto to convey the acceptance and the gratitude of the Union to the Board of Directors of the Astronomical Society of Japan.

The XXIIIrd General Assembly will be held August 18-30, 1997 in Kyoto (Japan).

## **21. Election to the Union of a President, a President-elect, three Vice-Presidents, a General Secretary and an Assistant General Secretary**

The General Assembly approved by acclamation the proposal of the President that Prof. L. Woltjer be elected the new President of the Union, for the term 1994-1997.

The General Assembly also approved by acclamation the proposal that Prof. R. Kraft be elected the President-Elect of the Union for the term 1994-1997.

The President then moved that Profs. C. Anguita, B. Hidayat & V. Trimble be elected the Vice-Presidents for the term 1994-1997. This motion was approved by acclamation.

The President finally proposed that Prof. I. Appenzeller be elected General Secretary of the Union, and Dr. J. Andersen, Assistant General of the Union, for the term 1994-1997. This proposal was approved by acclamation.

The President then invited Professors/Doctors J. Andersen, C. Anguita, B. Hidayat & V. Trimble to join the Executive Committee on the platform.

Following these elections, the IAU Executive Committee for the period 1994-1997 will thus be as follows:

|                |                             |                    |
|----------------|-----------------------------|--------------------|
| L. Woltjer     | President                   | <i>Netherlands</i> |
| R. Kraft       | President-Elect             | <i>USA</i>         |
| I. Appenzeller | General Secretary           | <i>Germany</i>     |
| J. Andersen    | Assistant General Secretary | <i>Denmark</i>     |
| C. Anguita     | Vice-President              | <i>Chile</i>       |
| D. Matthewson  | Vice-President              | <i>Australia</i>   |
| F. Pacini      | Vice-President              | <i>Italy</i>       |
| V. Trimble     | Vice-President              | <i>USA</i>         |
| B. Hidayat     | Vice-President              | <i>Indonesia</i>   |
| J. Smak        | Vice-President              | <i>Poland</i>      |
| J. Bergeron    | Adviser                     | <i>France</i>      |
| A.A. Boyarchuk | Adviser                     | <i>Russia</i>      |