

WORKING GROUP ON FUTURE LARGE SCALE FACILITIES IN ASTRONOMY

(GROUPE DE TRAVAIL POUR LES FUTURES GRANDES INFRASTRUCTURES)

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The idea for a Working Group (WG) on "Future Large Scale Facilities in Astronomy" grew from the Joint Discussion on this topic held on 20 August 1994, during the IAU General Assembly in The Hague. The IAU Executive Committee approved its formation in August, 1995, and Harvey Butcher was chair until the XXIIIrd General Assembly in Kyoto in 1997.

The Working Group's tasks are:

1. To promote the early discussion and dissemination of information on potential large scale astronomical projects;
2. To make and maintain an inventory of planned large scale projects in astronomy;
3. To further contacts and cooperation between different projects;
4. To identify areas of duplication and areas where clearly desirable efforts are lacking.

The WG considers "Large Scale" to be defined as costing about M\$100 or more for ground-based projects and more than about M\$400 for space-based instruments. Finally, the WG focuses especially on projects in their early phases, before they have received financing, and on projects only partially funded and in search of partners.

A one day Joint Discussion (JD 9) on "Future Large Scale Facilities" was organised by Harvey Butcher and held on 23 August 1997, during the IAU General Assembly in Kyoto, Japan. A number of presentations on the status of new optical/IR, radio, space and physics facilities were presented along with discussions of new, as yet unfunded, projects. In the period 1995-1997, the total cost of funded astronomy projects was M\$200 for radio, M\$1000 for ground based optical/IR and M\$5000 for space.

R.D. Ekers
Chairperson of the Working Group

Below follows a condensed summary of the inventory of future large projects in various states of preparation based on discussions up to 1997. There are also a large number of additional projects currently under discussion.

Table 1. Some Future Large Projects (based on 1997 Summary)

<i>Optical/IR Telescopes</i>			
Name	Nat/Co-op	Site	Remarks
Very Large Telescope (VLT)	Co-operation: 8 European countries, members of ESO.	Paranal (Chile)	Four 8.2m telescopes for use separately and together
Subaru	National (Japan)	Mauna Kea (Hawaii)	8m optical/ infrared telescope
Gemini	Co-operation: US, UK, Canada, Brazil, Argentina, Australia, Chile.	Mauna Kea (Hawaii); Cero Pachon (Chile)	Two 8m telescopes, One for N. hemisphere One for southern one.
<i>Radio</i>			
Milli-Meter Array (MMA)	US NRAO;	Atacama (Chile)	Now combined into the joint US/Europe/ Japan ALMA project
Large Mm and Sub-mm Array (LMSA)	Japanese National Astronomical Obs.:		
Large Southern Array (LSA)	Co-operation among European countries		
Square Kilometer Array (SKA)	Co-operation among six countries	To be determined	Synthesis array, in study phase
<i>Gravitational Waves, Astroparticles</i>			
LIGO	National (US, NSF)	Hanford (WA) Livingston (LA)	Laser Interferometer Gravitational wave Obs.
VIRGO	Co-operation: France & Italy	Cascina (Italy)	Gravitational wave detection through high sensitivity interferometry
Super-Kamiokande	National (Japan)	Kamioka mine (Gifu, Japan)	Solar neutrinos detection through Cerenkov effect.
Pierre Auger Observatory	Co-operation: 19 participating countries	Southern: Mendoza, Arg. Northern: Utah, USA	Two Cosmic ray detectors in Northern & Southern hemispheres

<i>Space Observatories</i>			
Name	National/Co-operation	Launch	Remarks
Chandra (AXAF)	National US (NASA)	1999	Advanced X-ray Astrophysics Facility. Now operational
XXM	Co-operation; Europe (ESA) & US instruments	1999	High throughput X-ray spectroscopic mission. Launched Dec. 1999.
INTEGRAL	Co-operation; Europe (ESA) & US participation	2003	γ -ray satellite.
PLANCK	Co-operation; Europe (ESA)	2007	Study of the anisotropies of the microwave cosmological background
ASTRO-E	Co-operation; Japan (ISAS), US & (NASA) participation	2000	High resolution X-ray spectroscopy of astronomical objects
SPEKTRUM-X	Co-operation Russia, Europe, Canada & Turkey	1997+?	7 X-ray & FUV telescopes with imaging, spectroscopy and polarimetry
RADIOASTRON	Co-operation; Russia, US, Europe, Australia India, etc.	1999+?	10m VBLI telescope.
<i>Interplanetary Probes</i>			
Rosetta	Co-operation; Europe (ESA) & US (NASA)	2003	Rendezvous with a comet, and asteroids flyby.
Cassini & Huyghens	Co-operation; US (NASA) & Europe (ESA)	1997	Planetary mission to Saturn. Cassini spacecraft is scheduled to arrive at Saturn in 2004.