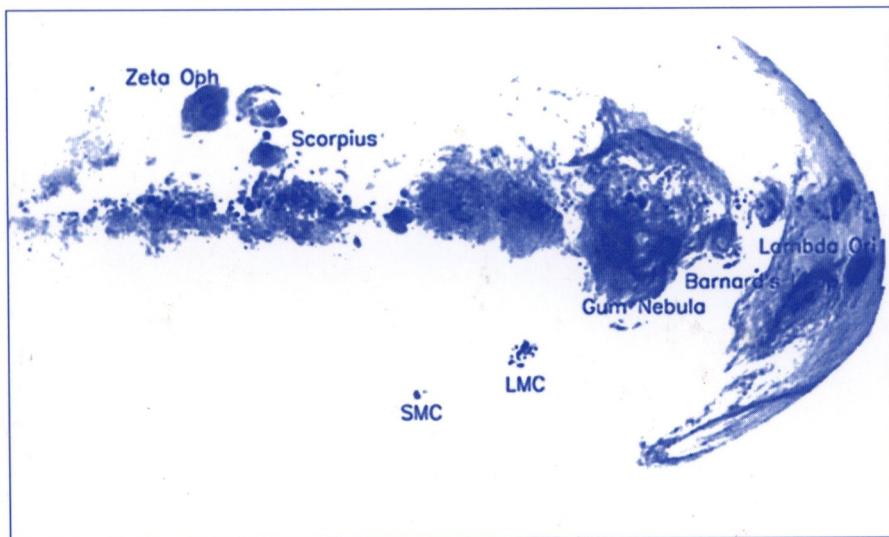




**SMALL-TELESCOPE ASTRONOMY ON GLOBAL SCALES**  
**IAU Colloquium 183**



Edited by  
**Wen-Ping Chen, Claudia Lemme, and Bohdan Paczyński**

SMALL-TELESCOPE ASTRONOMY ON GLOBAL SCALES  
IAU Colloquium 183

COVER ILLUSTRATION:

H $\alpha$  survey of the Southern sky (see Gaustad et al., p.75).

**A SERIES OF BOOKS ON RECENT DEVELOPMENTS IN  
ASTRONOMY AND ASTROPHYSICS**

Publisher

**THE ASTRONOMICAL SOCIETY OF THE PACIFIC**  
**390 Ashton Avenue, San Francisco, California, USA 94112-1722**  
**Phone: (415) 337-1100 Fax: (415) 337-5205**  
**E-Mail: catalog@asp.org Web Site: www.asp.org**

**ASP CONFERENCE SERIES - EDITORIAL STAFF**

Managing Editor: D. H. McNamara                    LaTeX-Computer Consultant: T. J. Mahoney  
Associate Managing Editor: J. W. Moody              Production Manager: Enid L. Livingston

PO Box 24453, 211 KMB, Brigham Young University, Provo, Utah, 84602-4463  
Phone: (801) 378-2111    Fax: (801) 378-4049    E-Mail: pasp@byu.edu

**ASP CONFERENCE SERIES PUBLICATION COMMITTEE:**

Alexei V. Filippenko	Geoffrey Marcy
Ray Norris	Donald Terndrup
Frank X. Timmes	C. Megan Urry

A listing of all other ASP Conference Series Volumes and IAU Volumes published by the ASP is cited at the back of this volume

**ASTRONOMICAL SOCIETY OF THE PACIFIC  
CONFERENCE SERIES**



**Volume 246**

**SMALL-TELESCOPE ASTRONOMY ON GLOBAL SCALES  
IAU Colloquium 183**

Proceedings of a Colloquium held in  
Kenting, Taiwan  
4-8 January 2001

Edited by

Wen-Ping Chen  
*Graduate Institute of Astronomy, National Central University  
Chung-Li, Taiwan, R.O.C.*

Claudia Lemme  
*Graduate Institute of Astronomy, National Central University  
Chung-Li, Taiwan, R.O.C.*

and

Bohdan Paczyński  
*Princeton University, Princeton, New Jersey, USA*

© 2001 by Astronomical Society of the Pacific. All Rights Reserved

*No part of the material protected by this copyright notice may be reproduced or utilized in any form or by any means – graphic, electronic, or mechanical including photocopying, taping, recording or by any information storage and retrieval system, without written permission from the publisher.*

Library of Congress Cataloging in Publication Data  
Main entry under title

Card Number: 2001093955  
ISBN: 1-58381-084-6

ASP Conference Series - First Edition

Printed in United States of America by Sheridan Books, Chelsea, Michigan

Conference Poster .....	xii
Preface .....	xiii
List of Participants .....	xiv
Conference Photograph .....	xvii
<b>Opening Remarks</b>	
<i>Bohdan Paczyński</i> .....	1
<b>I. Telescope Arrays and Networking</b>	
The Whole Earth Telescope: An International Adventure in Asteroseismology	
<i>Steven D. Kawaler</i> .....	3
MONET: a MOnitoring NEtwork of Telescopes	
<i>Frederic V. Hessman</i> .....	13
The STARBASE Network of Telescopes and the Detection of Extrasolar Planets	
<i>Charles H. McGruder, III, Mark E. Everett and Steve B. Howell</i> .....	23
STARBASE: A Network of Fully Autonomous Telescopes for Hands-on Science Education	
<i>Richard Gelderman, David Barnaby, Michael Carini et al.</i> .....	31
The NORT: Network of Oriental Robotic Telescopes	
<i>Roger Hajjar, François R. Querci and Monique Querci</i> .....	33
Taiwan Oscillation Network and Small-Telescope Research at Tsing Hua University	
<i>Dean-Yi Chou</i> .....	39
<b>II. Monitoring and Surveys</b>	
Monitoring Variability of the Sky	
<i>Bohdan Paczyński</i> .....	45
The All Sky Automated Survey (ASAS-3) System – Its Operation and Preliminary Data	
<i>G. Pojmański</i> .....	53
RTLinux Driven Hungarian Automated Telescope for All Sky Monitoring	
<i>Gáspár Á. Bakos</i> .....	59
The Grid Giant Star Survey for the Space Interferometry Mission	
<i>Richard J. Patterson, Steven R. Majewski, Catherine L. Slesnick et al.</i> ...	65
A Robotic Wide-Angle H $\alpha$ Survey of the Southern Sky	
<i>John E. Gaustad, Wayne Rosing, Peter McCullough et al.</i> .....	75
MOA Extra-Solar Planet Research via Cluster Supercomputing	
<i>Nicholas Rattenbury, Ian Bond, Phil Yock et al.</i> .....	77
YSTAR :	
Yonsei Survey Telescopes for Astronomical Research	
<i>Yong-Ik Byun, Won-Yong Han, Yong-Woo Kang et al.</i> .....	83

### **III. New Trends in Small-Telescope Technology**

The 1.3-meter Robotically Controlled Telescope: Developing a Fully Autonomous Observatory <i>Richard Gelderman</i> .....	89
The Development of Advanced-Technology Automated/Robotic Telescope Systems and the Future of Small-Telescope Astronomy <i>Richard J. Williams and James Mulherin</i> .....	95
Progress Report for the KAO 1.0 meter Robotic Telescope <i>Peter Mack, Wonyong Han, Matthew Bradstreet et al.</i> .....	103
ACE FlexGrid Telescope Flexure and Pointing Software <i>Peter Mack, John Stein, and Wonyong Han</i> .....	111
Development of the Far-ultraviolet Imaging Spectrograph on KAISTSAT-4 <i>Wonyong Han, Kyoung Wook Min, Jerry Edelstein et al.</i> .....	113
Design of a Multi-CCD Controller <i>Yong-Woo Kang, Yong-Ik Byun, Sung-Yeol Yu et al.</i> .....	115
The Multiple Telescope Telescope, an Inexpensive Fiber Fed Spectroscopic Facility <i>Reed L. Riddle and William G. Bagnuolo, Jr.</i> .....	117

### **IV. Transient Events**

The Lick Observatory Supernova Search with the Katzman Automatic Imaging Telescope <i>Alexei V. Filippenko, W.D. Li, R.R. Treffers et al.</i> .....	121
The Beijing Astronomical Observatory Supernova Survey <i>Yulei Qiu, Jingyao Hu, and Weidong Li</i> .....	131
Optical Identification of Gamma-Ray Bursts at Kenting Observatory <i>Wei-Hsin Sun and Shun-Tang Tseng</i> .....	143
Early Results from HETE-2 <i>N. Kawai, A. Yoshida, T. Tamagawa et al.</i> .....	149
RIBOTS: An Automatic Telescope System for Gamma-Ray Burst Follow-Up Observations <i>Yuji Urata, Nobuyuki Kawai, Atsumasa Yoshida et al.</i> .....	155
A Spectrograph for Prompt Observations of Gamma-Ray Bursts with a 1-m Telescope <i>Tetsuya Kawabata, Kazuya Ayani, Mitsugu Fujii et al.</i> .....	157

## V. Variability Study

Cataclysmic Variables: A 'SWOT' Analysis <i>Brian Warner</i> .....	159
Optical and Near-IR Monitoring of Symbiotic Binary Systems <i>Joanna Mikołajewska</i> .....	167
The Rotation and Variability of T Tauri Stars: Results of Two Decades of Monitoring at Van Vleck Observatory <i>W. Herbst</i> .....	177
High-Speed Photometry of Bright roAp Stars With Small Telescopes <i>D. W. Kurtz</i> .....	187
The Moscow Long-Term Program of Cepheid Radial Velocities <i>Nikolai Samus and Natalia Gorynya</i> .....	197
High Speed CCD Photometry of Flare Stars <i>Sun-Youp Park and Yong-Ik Byun</i> .....	203
Search for $\delta$ Scuti Type Pulsating Components in Eclipsing Binary Systems <i>S.-L. Kim, J.W. Lee, J.-H. Youn et al.</i> .....	205
Long-period Red Variables in the Large Magellanic Cloud from the MOA Database <i>Mine Takeuti, S. Noda, F. Abe et al.</i> .....	207
Spectroscopic Detection of an Extraordinary Flaring-Event on DF Tau <i>J.Z. Li, W.P. Chen, and W.H. Ip</i> .....	209
Search for Variable Stars in the Open Cluster NGC 2539 <i>K.J. Choo, S.-L. Kim, T.S. Yoon et al.</i> .....	211
The Ongoing Search for Variables in Young Clusters: Up-to-Date Results and Perspectives <i>A. Pigulski, G. Kopacki, Z. Kołaczkowski et al.</i> .....	213
Variable Stars in the Globular Cluster M92 <i>Grzegorz Kopacki</i> .....	216
Blazhko Cycles of $\omega$ Centauri RRab Stars <i>Johanna Jurcsik</i> .....	217
A Near Infrared Camera Refrigerated by Two Stirling Machines – an Alternative to Robotic Telescopes <i>José K. Ishitsuka I., Takehiko Wada, Fumihiko Ieda et al.</i> .....	219
Observations of Variable Stars by the 76-cm SuperLight Telescope of NCU <i>J.Z. Li, C.H. Wu, Z.W. Zhang et al.</i> .....	221
Observations of Variable Stars With a Small Telescope at Tabriz University <i>D.M.Z. Jassur, F. Adabi, and N.A. Cham</i> .....	223

## VI. Solar System Studies

The Role of Small Telescopes in the Discovery and Follow-up of Near Earth Objects <i>Andrea Boattini</i> .....	233
NEOPAT: Near-Earth Object PATrol program <i>Hong-Kyu Moon, Moo-Young Chun, Yong-Ik Byun et al.</i> .....	240
An Education Program Using Tera-Byte NEA Observation Data <i>A. Asami, D.J. Asher, T. Hashimoto et al.</i> .....	245
CCD Photometry of Two Asteroids (895) Helio and (165) Loreley <i>H.-S. Woo, S.-L. Kim, M.-Y. Chun et al.</i> .....	251
The Taiwan-America Occultation Survey for Kuiper Belt Objects <i>Sun-Kun King</i> .....	253
Distinguishing KBO from Asteroid Occultations in TAOS <i>Claudia Lemme and Chyng-Lan Liang</i> .....	259
The Humps of KBO's Size Distribution <i>Cheng-Pin Chen and Ing-Guey Jiang</i> .....	261
The True Colors of KBOs <i>Hui-Chun Hsu and Wing-Huen Ip</i> .....	263
Revealing Variety of Comets by Long-Term Monitoring Observation with a 50-cm Telescope <i>Jun-ichi Watanabe and Hideo Fukushima</i> .....	265
A Simulation of Shell Structures of Comet Hale-Bopp in February 1997 <i>J. Tao and B.C. Qian</i> .....	271
Cometary Polarimetry <i>Asoke K. Sen</i> .....	275
Observation of Comet C/1999 S4 (LINEAR) <i>C.Y. Lin and W.H. Ip</i> .....	277
High Spatial Resolution Observations of the 1998 and 1999 Leonid Meteors <i>X.J. Jiang and J.Y. Hu</i> .....	279
Project MONICA for the Study of Time-Variable Phenomena of the Jovian Sodium Cloud and the Io Plasma Torus <i>Chien-Pang Chang and Wing Ip</i> .....	281

## VII. Science With Small Telescopes

Long-Term Coudé Radial-Velocity Studies With a 1.2-m Telescope <i>C.D. Scarfe</i> .....	283
INTEGRAL and Small Telescopes <i>Nami Mowlavi, Peter Kretschmar, Marc Türler et al.</i> .....	289
The Carl Sagan Observatory: A Telescope for Everyone <i>J. Saucedo-Morales, A. Sánchez-Ibarra, and D. Lunt</i> .....	295

The NCU Lu-Lin Observatory <i>Wean-Shun Tsay, Alfred Bing-Chih Chen, Kuang-Hsiang Chang et al.</i>	299
Monitoring of AGNs at the Shanghai Astronomical Observatory <i>B.C. Qian and J. Tao</i>	305
Fast Drift-Scan CCD Imaging and Photometry with Small Telescopes: Lunar Occultations and Speckle Interferometry <i>Jorge Núñez and Octavi Fors</i>	309
The Automated Telescope of Novosibirsk State University <i>A. Nesterenko, M. Nikulin, D. Vyprentsev et al.</i>	315
Some Aspects of Astronomy at Maidanak Observatory <i>Alisher S. Hojaev</i>	317
Observational Results with the 1 Meter Telescope at Yunnan Observatory During 1990-2000 <i>P.S. Chen, and W.Y. Zhang</i>	324
Systematic Spectroscopic Observations on Small Telescopes: Past and Future Research of Stellar Kinematics <i>M.E. Sachkov, E.V. Glushkova, and A.S. Rastorguev</i>	327
Advantages and Drawbacks of the ISM Method in Globular Cluster Photometry <i>József M. Benkő</i>	329
Spatial Structure of Star Clusters by the 2MASS Database <i>J.W. Chen and W.P. Chen</i>	331
The Kinematics of Globular Cluster NGC 288 <i>Chan-Kao Chang, Alfred B. Chen, Wean-Shun Tsay et al.</i>	333
Bright Young Star Candidates in the Rosette Nebula <i>P.S. Chiang, W.P. Chen, J.Z. Li et al.</i>	335
Deprojection of Planetary Nebulae <i>Z.W. Zhang and W.H. Ip</i>	337
Chemical Abundances of the Planetary Nebulae NGC 2392 and NGC 3242 <i>C.H. Wu, J.Z. Li, Z.W. Chang et al.</i>	339
Former Soviet Union / West Europe Consortium for AGN Monitoring <i>N.G. Bochkarev, A.I. Shapovalova and A.N. Burenkov</i>	341
Russian/Former Soviet Union Experience in Small Telescope Usage for Investigation of Interstellar Matter (ISM) and Nebulae <i>N.G. Bochkarev</i>	343
Russian/Former Soviet Union Experience in Professional Small Telescope Usage <i>N.G. Bochkarev</i>	345

**Concluding Remarks***Brian Warner* ..... 353**Appendix: a List of Robotic Telescopes***Frederic V. Hessman* ..... 357