

COMMISSION 42: CLOSE BINARIES

(ÉTOILES DOUBLES SERRÉES)

PRESIDENT: Edward F. Guinan

VICE-PRESIDENT: Paula Szkody

ORGANIZING COMMITTEE: M. Rodonò (Past C42 President), L. Bianchi, J.V. Clausen, H. Drechsel, G. Hill, S.J. Kenyon, V. Niemela, Y. Osaki, C.L. Sterken, R.E. Taam, O. Vilhu, J.C. Wheeler, J.H. Wood

1. Introduction

Commission 42¹(Close Binaries) held one business and three science sessions during the XXIVth General Assembly in Manchester. The business meeting was held on 10 August (Thursday). Two consecutive science sessions (each lasting 1.5 hr) were held on 12 August (Saturday) and one science session took place on 14 August (Monday). In this report summaries of the transactions of the business meeting and science sessions are given. The science sessions were arranged so that Commission members attending the IAU General Assembly could have opportunity to interact with other members and to give informal presentations about their research. Because of space limitations only the titles and authors of the papers presented at the informal science sessions are given. Those interested in learning more about the material presented should contact the authors by e-mail. The Commission appreciates the help of the General Secretary, Johannes Andersen, for helping to arrange times and meeting rooms for the C42 science sessions.

2. Commission Structure and Composition

President, Vice-President and the Organizing Committee: At the business meeting the results of the elections of the President, Vice-President and new members of the Commission's Organizing Committee (OC) were announced and the names confirmed. Paula Szkody (USA) is the President and Alvaro Giménez (Spain) is the Vice-President of the Commission for the 2000-2003 triennium. The OC for the same period is: Edward Guinan (USA, former President), Luciana Bianchi (USA), Horst Drechsel (Germany, Editor in Chief of the Bibliography of Close Binaries), Douglas Gies (USA), Young-Woon Kang (Korea), Jeffrey Linsky (USA), Mario Livio (USA), Nidia Morrell (Argentina), Virpi Niemela (Argentina), Yoji Osaki (Japan), Slavek Rucinski (Canada), Christopher Sterken (Belgium), and Janet Wood (UK). Twenty six new members were admitted to the Commission. This brings the total number of Commission 42 members to about 380.

Deceased Members: During the last triennium the following distinguished members of our commission and friends passed away. The deceased C42 members include: William Blitzstein (USA), Salvatore Cristaldi (Italy), Kjeld Gyldenkerne (Denmark), Robert Hjellming (USA), Carlos Jaschek (Spain), Daniel Popper (USA), Jan Van Paradijs (Netherlands), Frank Bradshaw Wood (USA). The Commission appreciates the friendships and many contributions to close binary stars made by these colleagues. Also,

¹Commission 42 has a homepage at <http://www.konkoly.hu/IAUC42/>.

Alan Batten gave a remembrance of Zdenek Kopal, former president of C42 and Professor of Astronomy at the location of the General Assembly, the University of Manchester. Allan Batten briefly discussed Professor Kopal's career and contributions to close binaries.

3. Transactions of the Commission

The Commission 42 Triennial Report was distributed to the attending members. The report covers the interval from 1997-2000 and is published in *Reports on Astronomy*, Vol. XXIVa, (J. Andersen, Editor; ASP), p 259-276. Those wishing an electronic copy of the report should send requests to edward.guinan@villanova.edu or the file can be downloaded from the C42 website. This report contains a number of interesting and important reviews of advances made during the last three years in close binary stars.

Report on the Information Bulletin of Variable Stars: Katalin Oláh, Co-Editor of the Information Bulletin of Variable Stars (IBVS), reviewed the activities of the IBVS during the last three years. Her report is given in the Report of Commission 27 (Variable Stars), found elsewhere in this volume. The Commission very much appreciates the fine work done by the editors of the IBVS.

Report on the Bibliography of Close Binaries: Horst Drechsel, the Chief editor of the Bibliography of Close Binaries (BCB) could not attend the General Assembly but kindly provided the President with a summary that deals with important issues and problems concerning the BCB. A summary of the report was presented to the members by Edward Guinan. The primary points are given herewith. First it should be mentioned that up to December 1997 (Issue No. 65), this publication was known as "Bibliography and Program Notes on Close Binaries" (BPN). The current name of the BCB started with issue No. 66 in June 1998. On average, about 49 journals (plus proceedings, books, etc.) are searched and about 520 entries are included in each issue. Currently the BCB is divided into 4 sections: "Individual Stars", "General", "Collections of Data" and "Proceedings". The entries under "Individual Stars" and "Collections of Data" are listed according to the nature of the contents. Dr. Drechsel reports that there are about 250 people receiving hardcopies of the BCB and an unknown number of electronic downloads (HTML, PS and DVI files from:

<http://www.sternwarte.uni-erlangen.de/ftp/bcb> and

<ftp://www.sternwarte.uni-erlangen.de/pub/bcb>.

Also, it is reported that P. Niarchos (Greece) replaces M. Vetesnik (Czech Republic) on the editorial board of the BCB. Dr. Drechsel gave a year notice that he wishes to retire from being the Chief Editor of the BCB. Dr. Drechsel has served as Chief Editor of the BCB for over five years (Issues #60-70) and has done an outstanding job in this capacity. He has suggested some editorial board members as possible replacements and these are being considered. It is hoped that a new Chief Editor will be named by late 2000.

The copying and mailing costs of paper copies of the BCB are nearly US \$1000 per year (two issues). To reduce (or eliminate) the costs of copying and distributing the paper copies, it has been recommended that the BCB become available only electronically with HTML and PS files. The subscribers would be notified by e-mail when each issue is complete. These files could then be downloaded from C42 web server or a server maintained at the institution of the Chief Editor. Furthermore, it was recommended that paper copies of BCB issues would only be provided under very special circumstances to those who demonstrate the need for paper copies.

E-mail Addresses of Commission Members: Over the last triennium an effort was made to compile an up-to-date list of e-mail addresses of C42 members. Prior to this effort, the e-mail addresses of many commission members were not available or were obsolete and not usable. This effort was made primarily to improve communications with Commission 42 members so that they can be better informed and consulted on

the operations of the commission. Also, this will permit C42 members to be contacted and consulted on important matters that relate to close binary systems. These include the announcements of meetings, the publications of the BCB and IBVS, the operation and formation of Working Groups, as well as important developments in the study of close binary stars. The e-mail addresses of the commission members (whose e-mails are available) will be placed on the IAU C42 Web site. If you are a commission member and your e-mail is not included or is incorrect, please contact the C42 President so that the e-mail address list can be amended.

4. Support of Working Groups from the Commission

Currently there are over 20 Working Groups (WGs) established within the IAU framework. WGs typically focus on more narrow topics or on new or emerging fields of research not specifically covered by the commissions. One of the many advantages of WGs is that during the General Assembly, WGs can request time and meeting rooms for science and business sessions. C42 has supported one WG, (with C27 and Division V) – “The WG on Active B Stars”. However, during the General Assembly a proposal for another WG, “Working Group on Cataclysmic Variables”, was submitted and approved by the Executive Committee. Some additional possible WGs were suggested and discussed. The following WGs are being considered for support: “Working Group on Stellar Magnetism and Activity”, “Working Group on Extragalactic Binaries” and “Working Group on Binary Star Formation and Evolution”, “Working Group on Fundamental Physical Quantities from Eclipsing Binary Systems”, and “Working Group on Computer Methods for Analyzing Light and Radial Velocity Curves of Eclipsing Binaries”. Those interested in joining or developing one of these WGs or proposing for a different WG should contact the incoming C42 President, Paula Szkody (szkody@astro.washington.edu) or the incoming Division V President, Edward Guinan (edward.guinan@villanova.edu).

5. Designations of Stellar Companions

A Multi-Commission Meeting (MCM) on “Designations of Stellar Components” was held on 11 August 2000 during the XXIVth General Assembly. Commission 42 was one of the supporting commissions of the MCM. The meeting was organized by Helene R. Dickel who is the President of the “IAU Working Group on Designations” to resolve the problem of designating components of binary and multiple star systems. The development of new and more sensitive techniques for the detection and study of stellar companions is now blurring the traditional distinctions among astrometric, photometric, and spectroscopic binary and multiple star systems. The designation problem has become even more complicated since the discovery of planets and brown dwarfs around an increasing number of single and binary stars.

The primary aim of the meeting was to develop a simple, unambiguous, flexible, and computer friendly designation scheme for stellar companions that include planets and brown dwarfs. As reported by Colin Scarfe to Commission 42, the MCM resulted in the drafting a Type C Resolution. This resolution recommends a uniform designation scheme, based on the expansion of the new Washington Double Star (WDS) system developed by the U.S. Naval Observatory, be developed during the next three years to include all types of components (stars, brown dwarfs, and planets). Discussions and reviews over the next 2 1/2 years will take place with the goal of formulating a resolution that will be acceptable to all interested parties. Those interested can find more information and the text of the adopted Type C Resolution at the following web site:

<http://ad.usno.navy.mil/ad/wds/newwds.html>

Those interested in getting involved in this important process are invited to participate in the ongoing discussions of the best way to solve the designation problem.

It is hoped that this matter can be resolved in time so that a resolution can be submitted for consideration at the General Assembly in Sydney, Australia in 2003.

6. Commission 42 Science Sessions: Recent Developments in Close Binary Systems

The program of the Scientific Sessions of Commission 42 in Manchester “New Developments in Close Binary Systems” is given below. The sessions took place on 12 and 14 of August, 2000. The Commission appreciates the work done by the participants in making these Science Sessions both interesting and informative.

On 12 August (Saturday) the following papers were presented at the Blackett Theatre (Schuster Labs). These sessions were held from 14:00 to 17:30 (Chair: Edward Guinan):

- Andrea Dupree: “Coronal Structures in Close Binaries”
- Ronald Samec: “Near Contact and Shallow Contact Binaries: Interesting Period Studies and Stream Impact Phenomena”
- Janet Mattei: “AAVSO, EUVE, and RXTE TOO Helps Reveal Stages of Optical, EUV, and X-ray Emission observed in SS Cygni Outburst”
- Paula Szkody: “The Impact of HST on Cataclysmic Variables: Finding the WD and Distances”
- Jan-Erik Solheim: “How to Do Time Series Photometry under the Flaming Aurora?”
- Kresimir Pavlovski: “Fourier Disentangled Spectra of Close Binaries: A Way to Obtain Accurate Ages, Distances and Abundances”
- Alvaro Giménez: “Observing Light Curves of Eclipsing Binaries from Space”
- William Borucki: “Kepler: A Space Mission to Do 20 Micro-Magnitude Differential Relative Photometry of over 100 000 Stars”
- Yoji Kondo: “Future Prospects for Research in Close Binaries”
- Jorge Sahade: “Narrow Discrete Absorptions in AO Cas”
- Gerri Peters: “Circumstellar Material in Algol Systems with Early B-type Primaries and Short Periods”

The following papers were presented in the Blackett Theatre (Schuster Labs) on 14 August (Monday) from 11:00 to 12:30 (Chair: Paula Szkody):

- Edward Guinan: “Introductory Comments and Organization”
- Frans Van’t Veer: “W UMa Contact Binaries: Almost One Century of Speculations. How to Continue?”
- Virpi Niemela: “Massive Binaries in the Magellanic Clouds”
- Nidia Morrell: “Determination of the Apsidal Motion Period of the Massive Binary HD 93205”
- Edward Guinan: “Determining Distances using Eclipsing Binaries: Application to the Magellanic Clouds”
- Ignasi Ribas: “Accurate Masses, Radii and Distances of Eclipsing Binaries in M31”
- Taghi Mirtorabi: “TiO Band and Near-IR Photometry of Active Binaries”

Acknowledgments. I wish to thank the members of the Commission and the members of the Organizing Committee for their support, help and advise during the last three years. I wish to congratulate the incoming President Paula Szkody, and Vice President Alvaro Giménez and the new members of the C42 Organizing Committee. Also I want to welcome the new C42 members and hope that they become actively involved in the operations and work of the commission. During the last triennium I am also thankful to the Monique Orine and Jodi Greenberg (IAU Secretariat, Paris, France) for their assistance and advise. I also thank Ignasi Ribas for helping to obtain or update the e-mail addresses of commission members and for his help in organizing the Science Sessions during the General Assembly.

Edward F. Guinan
President of the Commission