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COMMISSION 42 CLOSE BINARIES
(ETOILES BINAIRES)

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PROCEEDINGS BUSINESS SESSIONS, 5 August 2009

1. The Organizing Committee

During the commission business session, the past President presented the new Organizing Committee which was selected by the OC through a e-mail vote conducted during the months before the Rio de Janeiro General Assembly. The new OC will consist of Ignasi Ribas (President), Mercedes Richards (Vice President), and Slavek Rucinski (Past President) with the members: David Bradstreet, Petr Harmanec, Janusz Kaluzny, Joanna Mikolajewska, Ulisse Munari, Panos Niarchos, Katalin Olah, Theo Pribulla, Colin Scarfe and Guillermo Torres.

2. The matters discussed

Three subjects were discussed during the session:
(1) Ron Samec presented photometric results for W UMa-type binaries with shallow but apparently total eclipses. These properties are interpreted within the context of the contact "Lucy" model as due to extremely low mass ratios of these binaries. The interpretation is based solely on the basis of light curve modeling without any spectroscopic support. The binaries are important as they would exemplify best the wide applicability of the contact model even when the stellar components are very different.
(2) On the very related matter, the Past President summarized recently published results (Pribulla & Rucinski(2008)) for the particularly important and well-known, low mass-ratio system AW UMa. Photometry of this binary gives an excellent determination of the mass ratio in the spirit as above, yet spectroscopy (which resolves the spatial dimension of the radial velocity and thus the correct mass ratio) gives an entirely different picture: The mass ratio is indeed small, but larger than the photometric one by a margin much larger than any formal uncertainty but – more importantly – the binary does not seem to be a contact one! No W UMa-type system was as thoroughly spectroscopically analyzed as AW UMa so we should be prepared for further surprises with other W UMa binaries; its should be noted, however, that V566 Oph does agree with the Lucy model. The case of AW UMa is a serious warning on the mechanical application of light curve synthesis codes to derivation of physical parameters of close binary stars.
(3) The Past President expressed his view that – in general – the situation in the field of light curve solutions is far from satisfactory one: On one hand single – but frequently poorly observed – binaries are analyzed for multitude of parameters with seldom trustworthy determination of uncertainties, on the other hand, thousands – soon millions light curves from massive ground-based and space photometric surveys – are begging for analysis, even simplest characterization.

The Past President plans to prepare a memorandum on the current state of the affairs which will address also the over-production of low usefulness papers; a partial remedy of combining objects into large groups will be suggested.

Other science subjects related to activities of the C42 members were discussed during the full-day business session of the joint C27 and C42 (forming the Division V) during on 6 August 2009.

3. Other matters

The bibliographic notes on Close Binaries (BCB) are being produced under the coordination of Colin Scarfe. The Web pages of C42 and the sister commission C27 within the Division V are maintained at the Konkoly Observatory by Andras Hall.

We note that recently, because of the similarity of techniques and methods – a very large close binary specialists has "migrated" to the field of extras-solar planet detection. Yet, the close binary star expertise is and will be very much needed in interpretation of large amounts of data coming from large ground-based and satellite photometric variability surveys.

Slavek M. Rucinski
President of the Commission

Reference

Pribulla, T. & Rucinski, S. M. 2008, *Mon. Not. Roy. Astr. Soc.* 386, 377

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