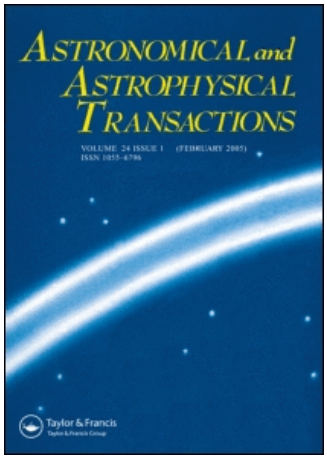

Astronomical & Astrophysical Transactions
The Journal of the Eurasian Astronomical Society
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713453505

BOOK REVIEW

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Online Publication Date: 01 January 2002
To cite this Article: Pustylnik, I. (2002) 'BOOK REVIEW', Astronomical & Astrophysical Transactions, 21:1, 169 - 170
To link to this article: DOI: 10.1080/10556790215567
URL: http://dx.doi.org/10.1080/10556790215567

Astronomical and Astrophysical Transactions, 2002, Vol. 21(1–3), pp. 169–170 Taylor & Francis
Taylor & Francis Group

BOOK REVIEW

Recently the library of amateur and professional astronomers studying eclipsing binary systems has been enriched by a new publication "*An Atlas of O – C Diagrams of Eclipsing Binary Stars*" by J.M. Kreiner, Chun-Hwey Kim and Il-Seng Nha, edition of Cracov Pedagogical University, 2001. Atlas summarizes the data for 1140 eclipsing binary stars of various types.

Investigations of orbital period variations in eclipsing variable stars through analysis of their O – C diagrams belongs to a traditional arsenal of binary star researchers, being actively in use for at least the last three quarters of the 20th century. One may say that the field of its numerous applications has advanced in parallel with a general progress of our knowledge of physical processes and evolution of binary stars. Prior to World War II, analysis of O – C diagrams concentrated basically on revealing the evidence for the presence of the apsidal motion, a search for a possible third component in the systems and the crude estimates of mass loss from this or that eclipsing variable. But over the last half of the 20th century it became more and more evident that in addition to these underlying mechanisms of the orbital period changes, multiple causes regulating variations of the orbital period reside both in the stellar interiors (manifesting themselves through stellar activity and possible readjustments of the inertial momentum) and well outside the binaries via complicated interactions between the component stars and the ambient gas and dust (accretion discs, gas streams etc.). These challenges have been met during the last decades by achieving a higher then previous accuracy of measuring both the epochs of minima and the brightness of variable stars, introduction of modern sophisticated methods of determining epochs and the orbital periods as well as their temporal changes and last but not least by theoretical modeling of angular momentum exchange and loss during nuclear evolution and via magnetic stellar wind. Therefore the systematization of the rich available observational data hitherto scattered in a great number of professional journals, variable stars bulletins etc. and assembling them into one reliable compendium has been a long anticipated step. At long last this kind of comprehensive edition has been accomplished by the very experienced investigators of eclipsing binaries Dr. J. Kreiner, Suhora Astronomical Observatory, Professor of the Pedagogical Academy of Cracov in cooperation with his South Korea colleagues Chun-Hwey Kim from Chungbuk National University and Il-Seong Nha, Museum of Astronomy.

The "*Atlas of O – C Diagrams of Eclipsing Binary Stars"* contains O – C diagrams for 1140 binaries satisfying 3 criteria: 1) at least 20 minima have been timed, 2) these minima spanned at least 2500 orbital cycles, 3) 2500 cycles represent no fewer than 40 years. The entries of the Atlas as usual contain the data on stellar coordinates of the objects, general information on catalogues and data bases, classification type of a binary, its visual magnitude, period, spectral types of the components, index $B - V$ and the amplitudes in both minima of

ISSN 1055-6796 print; ISSN 1476-3540 online
DOI: 10.1080/10556790290018926

the light curves. In addition the authors supplied the Atlas with explanatory comments, references, indication of possible activity cycles etc. Technically the graphical presentation of the O – C diagrams is especially fortunate for the observers of the eclipsing variables. It may serve a dual purpose: by inspecting available graphical data the observer can easily 1) insert his own fresh results to compare them with an existing trend in a specific object and 2) plan one's own future activities for a chosen observational target.

To sum up, a six volume edition of the "*Atlas of O – C Diagrams of Eclipsing Binary Stars*" will be a useful tool both for amateurs and professionals who actively make photometric measurements of eclipsing binary stars and for the wide community of investigators who study statistical properties of various types of binaries looking for evolutionary trends, specific mechanisms behind the continuous, sporadic or abrupt changes of period or are interested in properties of small stellar aggregates.

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