

RECENT RUSSIAN LITERATURE ON VARIABLE STARS

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Soviet astronomers have long been in the forefront of variable star research. Much of the resulting literature is readily available in the United States only to those who combine some familiarity with the language with access to large observatory libraries. Fortunately, the single most valuable contribution to the literature from the Soviet Union, the General Catalog of Variable Stars (Third Edition, 1969-70), is available with English translation from AAVSO Headquarters. This three-volume compendium, updated periodically with supplements, is the result of the considerable labors of a group at the Sternberg State Astronomical Institute of the Moscow State University directed by B. V. Kukarkin. Two other important publications by the same institution are the Catalog of Suspected Variable Stars and the journal "Variable Stars".

The language barrier has been rendered more unfortunate by the recent publication in the Soviet Union of a number of books on variable star astronomy for which there are no English-language equivalents. Foremost among these is a five-volume series entitled Unstable Stars and Methods for Their Investigation, containing review articles by specialists in their field on every class of variable star and techniques for observation and data interpretation. These books and two others of equal interest are listed below, with an outline of their contents and a few general comments. They can probably be ordered from the Soviet Union through leading international booksellers. Hopefully, English translations will be made of at least some of them.

- (1) B. V. Kukarkin (ed.), Unstable Stars and Methods for Their Investigation (Nestatsionarnye Zvezdy i Metody ikh Issledovaniya). Moscow: Izdatel'stvo "Nauka" (5 vols., 1970-71).

VOL. 1: B. V. Kukarkin (ed.), Pulsating Stars (Pul'siruyushchie Zvezdy). 371pp.

- I. S. A. Zhevakin: Theory of Stellar Pulsations (47pp.)
- II. Yu. N. Efremov: Classical Cepheids (60pp.)
- III. M. S. Frolov: Cepheids of the Spherical Component (16pp.)
- IV. V. P. Tsesevich: RV Tauri Stars (37pp.)
- V. V. P. Tsesevich: RR Lyrae Stars (63pp.)
- VI. M. S. Frolov: Delta Scuti Stars (23pp.)
- VII. M. S. Frolov: Dwarf Cepheids (18pp.)
- VIII. O. A. Mel'nikov and V. S. Popov: Beta Cephei Stars (21pp.)
- IX. Ya. Ya. Ikaunieks: Long Period Variable Stars of the Mira Ceti Type (47pp.)
- X. Ya. Ya. Ikaunieks: Semiregular and Irregular Variables (18pp.)

VOL. 2: A. A. Boyarchuk and R. E. Gershberg (eds.), Eruptive Stars (Eruptivnye Zvezdy). 375pp.

- I. V. P. Arkhipova and E. R. Mustel': Novae (52pp.)

- II. V. G. Gorbatskii: U Geminorum Stars (50pp.)
- III. A. A. Boyarchuk: Symbiotic Stars (54pp.)
- IV. M. E. Boyarchuk: R Coronae Borealis Stars (12pp.)
- V. R. E. Gershberg: Exploding Stars of the UV Ceti Type (62pp.)
- VI. P. N. Kholopov: Irregular Variables Associated with Nebulae and Related Objects (66pp.)
- VII. V. L. Khoklova: Alpha Canum Venaticorum Stars (42pp.)
- VIII. A. A. Boyarchuk, R. E. Gershberg, P. F. Chugainov, and N. M. Shakhovskoi: Observational Techniques for Eruptive Stars (23pp.)
- VOL. 3: V. P. Tsesevich (ed.), Eclipsing Variable Stars (Zatmennyye Peremennyye Zvezdy). 350pp.
- I. V. P. Tsesevich: Introduction (12pp.)
- II. V. P. Tsesevich: Photometric Phases of Eclipses (24pp.)
- III. A. M. Shul'berg: Eclipses of Spheroidal Stars Moving in Circular Orbits (44pp.)
- IV. A. M. Shul'berg: Limb Darkening in Spherical Stars (24pp.)
- V. V. M. Tabachnik: Determination of Elements with Computers (42pp.)
- VI. D. Ya. Martynov: Eclipsing Systems with Deformed Components. Detailed Effects. (54pp.)
- VII. V. P. Tsesevich: Unique Systems. (52pp.)
- VIII. A. M. Cherepashchuk: Eclipses of Spherical Stars Whose Darkening Takes Place According to an Arbitrary Law (52pp.)
- IX. D. Ya. Martynov: Elliptical Orbits. Motion of the Line of Apesides. Influence of a Third Body on the Epochs of Minima. (35pp.)
- VOL. 4: Phenomena of Instability and Stellar Evolution (Yavleniya Nestatsionarnosti i Zvezdnaya Evolyutsiya).
 Comment: This book has not yet been received by the writer. However, the general introduction to the series in Volume 1 indicates that the subject matter of this volume will include supernovae, galactic nuclei, quasars, and unique and unclassified objects.
- VOL. 5: V. B. Nikonov (ed.), Methods for the Investigation of Variable Stars (Metody Issledovaniya Peremennykh Zvezdy). 334pp.
- I. N. E. Kurochkin: Discovery of Variable Stars (38pp.)
- II. V. P. Tsesevich: Visual Estimates of Brightness and the Processing of Observations of Variable Stars (42pp.)
- III. P. N. Kholopov: Photographic Photometry of Variable Stars (26pp.)
- IV. P. F. Chugainov: Methods for Photoelectric Observations (50pp.)
- V. V. V. Prokof'eva: Application of Photoelectron Imaging Techniques (Electron Photography, Electron-optical Conversion, Television) (35pp.)
- VI. N. M. Shakhovskoi: Methods for Investigation of Polarization of Variable Stars (26pp.)

- VII. V. L. Straizhis: Photometric Systems (54pp.)
- VIII. A. S. Sharov: Photometric Standards (28pp.)
- IX. P. N. Kholopov: Determination of the Periods of the Light Variations of Variable Stars Using Electronic Computers (26pp.)

General Comment: The above five volumes constitute a detailed and authoritative survey of the entire field of variable star astronomy, with comprehensive references to the literature. The emphasis on observational aspects renders these books of great value to the advanced amateur as well as to the professional reader. The authors and editors have made a lasting contribution that will not be duplicated for a long time to come.

- (2) R. E. Gershberg, Flares in Red Dwarf Stars (Vspyshki Karlikovykh Zvezd). Moscow: Izdatel'stvo "Nauka" (1970). 168pp.
 - I. Observational Results on Exploding (UV Ceti) Stars (82pp.)
 - II. Hypotheses on the Nature of the Explosions of UV Ceti Stars (16pp.)
 - III. The Nebular Model of the Explosions of UV Ceti Stars (25pp.)
 - IV. Explosions of UV Ceti Stars and Some General Problems of Stellar Instability (14pp.)
 - V. Conclusions (7pp.)
 - VI. Bibliography of Observational Work (8pp.)

Comment: This book is a fairly comprehensive review of the present state of knowledge concerning this important class of variable star, with a supplementary section updating the literature references to 1970. The historically-oriented first section is of particular interest, integrating the rather considerable amount of photometric, spectrometric, polarimetric, and radiometric data into a coherent picture. The list of stars and extensive bibliography in the last section will be especially useful to any observer of these stars.

- (3) V. P. Tsesevich, Variable Stars and Methods for Their Investigation (Peremennye Zvezdy i Sposoby ikh Issledovaniya). Moscow: Izdatel'stvo "Pedagogika" (1970) 239pp.
 - I. Physics of Stars (26pp.)
 - II. Stellar Eclipses (28pp.)
 - III. Variability of Young Stars (13pp.)
 - IV. Pulsating Stars (38pp.)
 - V. Variable Stars in Stellar Systems (9pp.)
 - VI. Methods for Visual and Photographic Observations of Variable Stars (41pp.)
 - VII. Photoelectric Observations of Variable Stars (29pp.)
 - VIII. Catalog of Selected Variable Stars, Finder Charts, and Comparison Star Magnitudes (28pp.)

Comment: The author, a well-known authority on the observational aspects of variable star astronomy (his monograph on the RR Lyrae stars is now available in English translation), provides here a useful guide to this subject at a level readily understandable to the more advanced amateur observer. The emphasis on the photometric properties of the various classes of variable stars is particularly valuable. Chapter VI includes a detailed discussion of the determination of the properties of light curves from observational data, using as examples 97 individual observations of the eclipsing variable EI Aquarii and 16 estimated dates of maxima of the long-period variable CSV 379. Chapter VIII gives charts and sequences for 63 bright variables, suitable for amateur observation. In short, this is a book nearly ideally designed for the observer of variable stars, amateur or professional.

VISUAL MAGNITUDES OF COMPARISON STARS IN VARIABLE STAR FIELDS

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Existing photoelectric V magnitudes given in Blanco et al. (1968) and later references, together with the standard photovisual sequences published by Wirtanen and Vyssotsky (1945) are being incorporated into the planned AAVSO Atlas of Variable Stars. These data will provide reliable comparison star magnitudes for most of the variable stars brighter than tenth magnitude.

Similar data are rarely available for stars in the fields of fainter variable stars. Many of the visual sequences on the provisional charts prepared by C. B. Ford for new variables in the AAVSO program have been visually estimated at the telescope (mostly by the author and L. Hazel), and are subject to possibly significant errors. Observers noting discrepancies on old or new charts are invited to communicate their comments to the author at 124 Ferndale Road, Scarsdale, New York 10583. Sky-checks of all preliminary charts by several observers will help to insure high quality in the final blueprint charts.

Photoelectric or photometric data, particularly recent or unpublished results, for all stars brighter than tenth magnitude, and for fainter ones in variable star fields would be much appreciated, and such data will be appropriately acknowledged.

REFERENCES

1. V. M. Blanco, S. Demers, G. G. Douglass, and M. P. Fitzgerald 1968, "Photoelectric Catalogue", Publ. U. S. Naval Obs., Vol. XXI.
2. C. A. Wirtanen and A. N. Vyssotsky 1945, "McCormick Photovisual Sequences", Ap.J. 101, 141-178.