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Obituary

In memory of Yury N. Efremov (1937–2019)

Professor Yury Nikolaevich Efremov, chief research fellow of the Division of the Study of the Galaxy and Variable Stars of Sternberg Astronomical Institute of Lomonosov Moscow State University, Doctor of Physical and Mathematical Sciences, died suddenly on August 26, 2019 at the age of 82.



Yury N. Efremov (1931–2018)

A graduate of the Astronomy Division of Moscow State University, Yury Efremov spent almost his entire research life at Sternberg Astronomical Institute. He left an important legacy in modern Galactic astronomy. His range of research interests was amazingly broad, spanning from the history of astronomy to mysterious processes of the formation of stars, star clusters, and associations. Yury Efremov began his research career by investigating variable stars of various types as a member of the team of the compilers of the first editions of the General Catalogue of Variable Stars – perhaps the most in-demand project in Soviet astronomy. Back then he focused his attention on classical Cepheids – unique young variable stars, which, owing to their period–luminosity relation as well as the period–age relation discovered particularly by Yury Efremov, serve as tracers of the space-age structure of galaxies.

For many years Cepheids were his prime research interest in astronomy. Yury Efremov searched for Cepheids in open clusters and proved himself as an outstanding and ingenious observer when using the modest AZT-2 telescope of the Sternberg Astronomical Institute observatory to study, together with P.N. Kholopov, the unique

pair of close Cepheids CE Cas (A,B) in the open cluster NGC 7790 with a separation of only 2.3 arcseconds. Yury Efremov also participated in the pioneering study of the optical variability of the 3C273 quasar.

It is to Yury Efremov that we owe the fundamental discovery of stellar complexes as the largest cells of ongoing star formation in disk galaxies containing gas and young objects. His monograph "Sites of star formation in galaxies, stellar complexes, and spiral arms" (1989) was translated into English and remains popular among researchers. It was duly appreciated by leading world astrophysicists, and B. Elmegreen, S. Larsen, E. Alfaro, P. Battinelli, I.D. Karachentsev, A.D. Chernin, V.L. Afanas'ev, and many others became his permanent coauthors over many years. As for stellar complexes with a characteristic size of about 1 kpc, Yury Efremov was the first to point out their regular alignment in galactic spiral arms – a feature that is totally consistent with the theoretical concept of gravitational instability of giant gaseous clouds that produce gas-and-stellar complexes.

Yury Efremov represents the classical, but now rarely encountered type of natural scientist relying in their research on outstanding intuition and insight rather than mathematical formulae and computers. (He used to jokingly boast of having only one formula in his Doctor of Science thesis.) He had a sharp eye and a rare ability of combing seemingly dissimilar facts and observational data to reveal new patterns within the framework of a general concept. Yury Efremov authored and coauthored more than 230 publications, and the sheer number of citations – more than 2700 – is indicative of the actual value of the ideas advanced in his works.

Much can be said about astronomical achievements of Yury Efremov, but he also spent considerable effort and time to preserve the integrity of science. This fight was and remains very important in the epoch of the explosive growth of parascientific charlatanry and proliferation of pseudoscientific ideas and theories. Yury Efremov could not stay out of this struggle. With great enthusiasm he joined the Commission of the Russian Academy of Sciences for combatting pseudoscience, and became a member of the editorial board of the "V zashchitu nauki" ("In defense of science") bulletin. Yury Efremov himself published a number of fierce and uncompromising articles on the subject and actually contributed to combatting the so-called "New Chronology" by obtaining, jointly with A.K. Dambis and E.D. Pavlovskaya, convincing results about the dating of the star catalog in Ptolemy's Almagest.

Yury Efremov published a number of popular scientific books, which stimulated several generations of young amateur astronomers to undertake the career of professional researchers, or, at least, to become interested in the stunningly beautiful science of astronomy. Yury Efremov had a very multifaceted personality. Anyone who contacted Yury Efremov will remember him as an excellent colleague and friend, a bit naïve, joyful, and often laughing infectiously, highly erudite, and amazingly hard working. Anyone who met him felt attracted with no barriers whatsoever. Being a researcher rather than a lecturer, he nevertheless left many disciples.

The passing of Yury Efremov leaves us with an acute feeling of the loss of a senior friend, excellent scientist, and a representative of the school of our teachers to whom the Sternberg Astronomical Institute owes its unique atmosphere of friendship, solidarity, and unity.