Abstract

Symbiotic stars are among the widest interacting binaries. They consist of a late-type, cool giant and a hot component, which is typically a white dwarf or in a few cases a neutron star. The presented thesis summarizes all the relevant information on the symbiotic binaries, including both components of systems, their activity, and other manifestations of variability. Symbiotic systems are presented as unique astrophysical laboratories in the study of stellar evolution, mass transfer and its accretion, stellar winds, jets, and other physical processes.

A part of the thesis presents the New Online Database of Symbiotic Variables, a modern, complex, and most up-to-date catalog of these binaries that currently contains more than 1 000 objects in the Milky Way and another 16 galaxies. At the same time, the Database constitutes the most comprehensive collection of orbital, stellar, and observational parameters of all known symbiotic binaries. These data are studied in detail in order to better understand the symbiotic population.

From the Database, poorly characterized symbiotic candidates have been selected and studied on the basis of new and archival observational data and information from the literature. A substantial sample of 47 symbiotic candidates from the literature and 3 newly discovered objects located in our Galaxy, Large Magellanic Cloud, M31, and NGC 2403 have been analyzed. Twelve objects have been confirmed as symbiotic stars in the scope of this work, including three 'slow' symbiotic novae. Additional six are classified as possible symbiotic binaries. Notably, the discovery and characterization of the first galactic and first extragalactic symbiotic stars discovered by the *Gaia* satellite are presented. Another object is classified as the first galactic recurrent 'slow' symbiotic nova.

Keywords: binaries: symbiotic – techniques: photometric, spectroscopic – catalogs