

Survey of red giants in eclipsing binaries

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Abstract. Detailed studies of red giants in eclipsing binaries provide empirical verification of stellar evolution models, so such systems are therefore extremely important for critical tests of the adopted models. We present the results of our survey dedicated to search for new eclipsing binary stars from the ASAS catalogue which contain red giants as components.

Absolute physical and orbital parameters for long period double-lined detached eclipsing binary systems were determined using ASAS photometry supplemented by SuperWASP data and measurements from the network of 0.5 m robotic telescopes (Solaris Project), and radial velocities (RVs) calculated from high quality optical spectra we obtained with the wide spectrum of high resolution spectrographs. Two-dimensional cross-correlation technique (TODCOR) was used for RVs calculation with synthetic template spectra chosen for every system separately as references. We checked the evolutionary status of the systems with several sets of isochrones and determined distances for each system. The derived uncertainties for individual masses and radii of components are better than 3% for several systems. Additionally, we performed chemical abundances analysis for the system whose spectra we disentangled.