

Abstract

This bachelor thesis deals with δ Orionis A, a triple star from the multiple star system δ Orionis (Mintaka) in the constellation of Orion. This triple star consists of an eclipsing binary with the orbital period $P = 5.732436$ d and a distant tertiary with an orbital period in the order of several thousands of days. Even though the spectral lines of the secondary are very weak in the optical spectrum, they can be detected using a special analysis technique in the program **KOREL**. This work is based on a series of photometric and spectroscopic observations of changes in the brightness. The spectroscopic data come from the Ondřejov observatory and the photometric data are from several different photometers on artificial Earth satellites: SMEI, MOST and BRITe. Using spectroscopic data analysis software suite it was possible to determine the eccentricity $e = 0.07590$ and the mass ratio $q = 0.44963$. The parameters of the eclipsing binary were determined with the help of the eclipsing binary modelling software **PHOEBE 1** that can process the light curves (photometry) as well as the radial velocity curves (spectroscopy). The residuals of light curves, or the deviations between the theoretical model and observation, were separated from the local solution and using the Stellingwerf statistics, one of the Phase Dispersion Minimization methods, the influence of other physical variations additional to the binary eclipses was investigated. The period of about 90 days appears to be possible.