

## Analysis of the FF Aqr spectra

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### Abstract

We determine the atmospheric parameters of the secondary in the close binary system FF Aqr and analyze its chemical composition. A series of high-resolution spectra are taken at different orbital phases using the coude echelle spectrometer of the 1.5-m Russian-Turkish Telescope (RTT150). We show that the absorption line intensity of heavy elements varies with phase due to the spotty nature of the cool component. We determine the abundances of heavy elements in the star's atmosphere by modelling the synthetic spectra and performing a differential analysis of the chemical composition of FF Aqr relative to the solar composition. Our analysis of the averaged spectrum of FF Aqr yielded 539 abundance estimates for 21 chemical elements. We found the metallicity of the star ( $[Fe/H] = -0.11 \pm 0.08$ ) to be close solar, in agreement with the hypothesis that FF Aqr should belong to the Galactic disk. The inferred chemical composition of the objects exhibits no anomalous abundances of the  $\alpha$ -, r-, and s-process elements like those earlier found in other systems (IN Com, LW Hya, V471 Tau). The lack of such anomalies in FF Aqr must be due to the fact that the elements heavier than 16O cannot be synthesized in the core of the primary during the last stages of its evolution. © 2011 Pleiades Publishing, Ltd.

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### Keywords

binaries-stars, FF Aqr, individual, stars, variables-stars