Photometric researches of chromospheric activity variations for star systems with exoplanets using small telescopes

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Abstract. We present the results of photometric observations for four star systems containing extrasolar planets with short orbital periods from 1.5 to 6.5 days: HD68988, HD168746, HD219828 and Qatar-1.

The detection of chromospheric activity variations was carried out based on an analysis of variability of some strongest chromospheric lines H,K CaII and H-alpha. Optical variability in B and R photometric bands containing these lines was found. A periodogram Fourier analysis of obtained data was done. There were detected light curve variations of noted stars having exoplanets. Variation periods correspond to exoplanet orbital periods and their fractions. The amplitudes of variations are within 0.055-0.015 magnitudes range for different filters. Detected periods of light curve variations indicate the possible connection of chromospheric activity variations with exoplanet orbital periods.

BVR CCD photometry was obtained at Crimean Astrophysical Observatory (Ukraine) using a 38-cm Cassegrain telescope and at the peak Terskol observatory (Russia, Northern Caucasus) using 60-cm Zeiss-600 and Meade-14" telescopes from 2005 to 2013. Observational data precision is completely sufficient to solve the problem.