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Eclipsing Binary in the Field of Open Cluster NGC 2126

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Eclipsing binaries with pulsating components are very crucial objects for asteroseismology. We present the results of an analysis of photometric time series observations for the intermediate-age open cluster NGC 2126 acquired during the years 2004, 2013 and 2015 with the aim to detect new variable stars and to study binary systems. The CCD photometric light curves in V band of the eclipsing binary with pulsating component named V551 Aur are presented. Our four epochs of light minimum along with others compiled from the literature were used to revise the orbital period which is 1.173 days. The Wilson-Devinney technique was used to analyze the light curves for determining a new set of the system's parameters. According to the analysis, the solution shows that V551 Aur is a detached eclipsing binary system with a mass ratio of about 0.77 and inclination of about 73 degree. A frequency analysis of the eclipse-subtracted light curve gives a main frequency of $f_1 = 7.713$ c/d. The ratio between the orbital and pulsation periods with the value of 9.05 may indicate the existence of resonance or a possible causal relation to tidal effects suggesting that the 9th harmonic of the orbital period is excited by the tidal forces.

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