

# A survey for high-mass eclipsing binaries

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We report results from a search for Galactic high-mass eclipsing binaries. The photometric monitoring campaign was performed in Sloan  $r$  and  $i$  with the robotic twin refractor RoBoTT at the Universitätssternwarte Bochum in Chile and complemented by Johnson UBV data. Comparison with the SIMBAD data base reveals 260 variable high-mass stars. Based on well-sampled light curves, we discovered 35 new eclipsing high-mass systems and confirm the properties of six previously known systems. For all objects, we provide the first light curves and determine orbital periods through the Lafler-Kinman algorithm. Apart from GSC 08173-0018 and Pismis 24-13 ( $P = 19.47$  d and  $20.14$  d) and the exceptional short-period system TYC 6561-1765-1 ( $P = 0.71$  d), all systems have orbital periods between 1 and 9 d. We model the light curves of 26 systems within the framework of the Roche geometry and calculate fundamental parameters for each system component. The Roche lobe analysis indicates that 14 systems have a detached geometry, while 12 systems have a semidetached geometry; seven of them are near-contact systems. The deduced mass ratios  $q = M_2/M_1$  reach from 0.4 to 1.0 with an average value of 0.8. The similarity of masses suggests that these high-mass binaries were created during the star formation process rather than by tidal capture. © 2019 The Author(s)

Associations: general

Binaries: eclipsing

Binaries: spectroscopic

Open clusters

Stars: formation

Stars: fundamental parameters