

New objects with the B[e] phenomenon in the Large Magellanic Cloud

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Abstract / The study is aimed at discovering new objects with the B[e] phenomenon in the Large Magellanic Cloud. We report medium-resolution optical spectroscopic observations of two newly found (ARDB 54 and NOMAD 0181–0125572) and two previously known (Hen S–59 and Hen S–137) supergiants with the B[e] phenomenon in the Large Magellanic Cloud. The observations were obtained with the GMOS spectrograph at the southern Gemini telescope. Optical spectra of ARDB 54 and NOMAD 0181–0125572 are presented for the first time as well as their fundamental parameters. We found that the Balmer line profiles of Hen S–59 and Hen S–137 were different from those observed in their spectra nearly 20 years ago. We suggest a higher effective temperature and luminosity for both objects. With the new fundamental parameters, the lowest luminosity for known supergiants with the B[e] phenomenon in the Magellanic Clouds is higher than previously thought ($\log L/L_{\odot}$ instead of 4.0). Hen S–59 may be a binary system based on its UV excess, variable $B - V$ colour-index and radial velocity of emission lines, and periodically variable I -band brightness.

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