

On the nature of high reddening of Cygnus OB2 #12 hypergiant

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Abstract

© 2016 The Authors. To explain the nature of the high reddening ($A_V \approx 10$ mag) towards one of the most luminous stars in the Galaxy - Cyg OB2 #12 (B5 Ia-0), also known as MT304, we carried out spectrophotometric observations of 24 stars located in its vicinity. We included five new Bstars among the members of Cygnus OB2, and for five more photometrically selected stars we spectroscopically confirmed their membership. We constructed the map of interstellar extinction within 2.5 arcmin radius and found that interstellar extinction increases towards MT304. According to our results the most reddened OB-stars in the association after MT304 are J203240.35+411420.1 and J203239.90+411436.2, located about 15 arcsec away from it. Interstellar extinction towards these stars is about 9 mag. The increase of reddening towards MT304 suggests that the reddening excess may be caused by the circumstellar shell ejected by the star during its evolution. This shell absorbs 1 mag, but its chemical composition and temperature are unclear. We also report the detection of a second component of MT304, and discovery of an even fainter third component, based on data of speckle interferometric observations taken with the Russian 6-m telescope.

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Keywords

Binaries: visual, Dust, extinction, Instrumentation: high angular resolution, Open clusters and associations: individual: Cygnus OB2, Stars: early-type, Stars: massive