IS PARTIAL MIXING OF MATTER IN THE COMPONENTS OF BINARY SYSTEMS POSSIBLE?

E. I. Staritsin

K.A. Barkhatova Kourovka Astronomical Observatory, B.N. Yeltsin Ural Federal University, pr. Lenina 51, Ekaterinburg 620000, Russia

Data on the absolute elements of the components of binary systems which are in the hydrogen burning phase and belong to different early spectral B subclasses are analyzed using models of stars with partial mixing of matter from the radiative envelope and convective core. Partial mixing favors a larger increase in the luminosity and a smaller increase in the size of a star as it evolves along the main sequence (MS). The available data on the masses, sizes, and luminosities of the components of binary systems support the possibility of partial mixing in their interiors similar to the mixing that occurs in isolated MS B-stars in the same spectral subclasses. The mechanism of partial mixing can serve as an alternative or a supplement to the mechanism of additional mixing at the boundary of the convective core in analyses of the
observed characteristics of binary systems, in particular the enhanced luminosity of the optical components of x-ray binaries, and this requires further study. The existing data on the absolute elements of the components are insufficient for imposing strict limits on the amount of partial mixing and identifying quantitative differences between mixing in the components of binary systems and isolated stars, if this occurs.

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Comments:

Email: evgeny.staritsin@urfu.ru