The masses of compact objects in the X-ray binaries Cen X-3, LMC X-4, SMC X-1, 4U 1538–52, Vela X-1 and 2S 0921–63

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Composite radial-velocity curves obtained in observations of the X-ray binaries Cen X-3, LMC X-4, SMC X-1, 4U 1538–52, and Vela X-1 [1], containing OB-supergiants, are interpreted using the statistical approach for the Roche model. The interaction between the binary components, as well as the anisotropy of stellar wind from the optical counterpart are taken into account. As a result, the estimates of masses of the X-ray pulsars in these binary systems have been improved and the adequacy of the model to the observational data has been checked. Using the same model, an observed radial-velocity curve of the X-ray binary 2S 0921–63 [2], with a low-mass optical counterpart, is interpreted taking into account the interaction between the components and the screening of X-ray flux by the accretion disk. Correlations are obtained between the optical star mass m_v and the compact object mass m_x for the three orbit inclinations: $i = 60°$, $75°$ and $90°$.

References

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[2] P.G. Jonker, D. Steegh, G. Nelemans, M. van der Klis. MNRAS 356, 621 (2005)