

THE EVOLUTION OF STELLAR INTERIORS IN MASSIVE BINARY SYSTEMS

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Abstract. Some of the most exciting cosmic phenomena are thought to occur in massive binary systems. For example, gamma-ray bursts (GRBs) are associated with collapsars - rapidly rotating massive stars (Petrovic et al. 2005a). Also, sources of gravitational waves, recently observed by the LIGO and Virgo telescopes, are binary systems containing compact objects, relics of massive stars - black holes and neutron stars (Abbott et al. 2019). Stellar interiors in such systems are evolving different compared to the single stars due to the process of mass transfer between the components, accretion and mixing processes (Petrovic et al. 2005b). In this contribution, evolution of stellar components in close massive binary systems, calculated with the MESA numerical code (Paxton et al. 2015), is presented.

References

- Abbot, B. P., Abbott, R. Abbott, T. D. et al. : 2019, *Phys. Rev. X*, vol. 9, **3**, 031040
Paxton, B., Marchant, P., Schwab, J., Bauer, E. B., Bildsten, L., Cantiello, M., Dessart, L., Farmer, R., Hu, H. Langer, N., Townsend, R. H. D., Dean, M., Timmes, F. X. : 2015, *Astrophys. J. Suppl. Series*, **22**, 15.
Petrovic, J., Langer, N., Yoon, S.-C., Heger, A. : 2005, *Astron. Astrophys.*, **435**, 247.
Petrovic, J., Langer, N., van der Hucht, K. A. : 2005, *Astron. Astrophys.*, **435**, 1013.