

Stellar evolution along the HR diagram with Gaia



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Triage of Gaia astrometric binaries

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In preparation for the release of the astrometric orbits of Gaia, Shahaf, Mazeh, Faigler, and Holl (2019) proposed a triage technique to identify hierarchical triples and astrometric binaries that have compact companions. The classification is done based on the astrometric semi-major axis, the parallax, and the primary mass, and relies upon the use of an appropriate mass-luminosity relation. Having the astrometric orbits of Gaia at hand, we analyzed a sample of binaries with main-sequence stars primaries less massive than ~ 3 Solar masses. We identified a large sample of hierarchical triples; hundreds of main-sequence stars with a white dwarf companion; and, dozens of systems with neutron star or black-hole candidates as their faint massive secondaries. We discuss the sensitivity of the method to the age and composition of the primary star and use the classification to discuss the emerging properties of their populations as a whole.

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