

Binary stars in the Gaia DR3 era

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I will review some findings about binary stars recently achieved using Gaia DR3 data, and bearing some relationships with nucleosynthesis. More details may be given in the corresponding focused contributions (if accepted):

1/ The red giant 56 Uma, formerly classified as a barium star, probably hosts a (dormant) neutron-star companion of mass 1.3 Msun. Its abundances have been reviewed and not any longer tag the giant as a barium star (Escorza, Van Eck et al.);

2/ Several neutral-hydrogen cavities in the ISM, with fast-moving gas at their boundaries, are likely related to supernova explosions whose candidate progenitors have been searched among Gaia DR3 binaries possibly hosting a neutron-star companion, and likely candidates have been found (Escorza et al.);

3/ Samples of non-AGB Ce-rich and Ce-normal stars have been identified among the stars analysed in Gaia DR3, and it has been found that the frequency of binaries among Ce-rich is very significantly larger, because they were extrinsically-polluted by mass transfer from their (likely WD) companion (Van Eck et al.);

4/ A full orbital (astrometric-spectroscopic) solution (with period 17.2 ± 0.9 yr, $i = 37.7 \pm 2^\circ$, $M_1 = 1.9$ Msun, $M_2 = 2.6$ Msun - to the best of our knowledge, the first orbit ever derived for a true AGB star) has been obtained for the carbon-star V Hya, exhibiting a jet and a dust clump obscuring the AGB star at each superior conjunction (Planquart et al.).

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