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New O and Be runaway stars found with Gaia DR3 (poster pitch)

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A relevant fraction of massive stars are runaway stars, moving with a significant peculiar velocity with respect to their environment. The runaway origin can be explained by kicks produced in supernova explosions or by dynamical ejection of stars from clusters. Runaway stars can be detected using accurate proper motions and parallaxes such as the ones provided by Gaia. We present here a 2-dimensional method in the velocity space to discover runaway stars among GOSC and BeSS catalogs using Gaia DR3 data. We found 106 O runaway stars, 42 of them with no previous identification as runaways, and 69 Be runaway stars, 47 of them with no previous identification as runaways. We further characterize their velocity dispersion, spatial distribution and runaway percentage as a function of the spectral type. The percentage of runaways is 25.4% for O-type stars and decreases to 5.2% for Be-type stars. The higher percentages and larger velocities found for O-type runaways compared to Be-type ones reinforce the dominance of the dynamical ejection scenario versus the binary supernova one. Our results open the door to identify new high-energy systems or stellar bow shocks among our runaways by conducting detailed studies.

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