

The Synergy between VLBI and Gaia astrometry

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With the publication of Gaia DR2, 1.3 billion stars now have public parallax and proper motion measurements. In this contribution we compare the results for sources that have both optical and radio measurements, showing that one has to be cautious in particular when using Gaia data for large, variable and bright AGB stars. Moreover, there are still a number of applications where VLBI astrometry yields unique constraints for astrophysical problems in Galactic astronomy, even though the number of objects with Gaia astrometry is much larger than the number of Galactic sources with VLBI astrometry. The stars in the BAaDE sample can uniquely constrain the dynamics and stellar content of the bulge and bar of the Milky Way. We are analysing pilot VLBI observations of the SiO masers associated with such Mir-like stars. The BeSSel project not only provides parallax and proper motions at much larger distances than Gaia can reach, but it also uniquely samples the spiral arms of the Galaxy. With the advent of the SKA this can be extended to weaker sources, notably for the Southern hemisphere where the inner Galaxy can be sampled as we show in simulations of the Galactic population of methanol masers.