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Astrometric observations of neutron stars

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Abstract. Astrometric observations of neutron stars have been conducted with a variety of techniques and over a wide range of wavelengths, ranging from radio-pulse timing and Very Long Baseline Interferometry to optical and X-ray imaging. Here I review the techniques and scientific goals behind recent high-precision neutron-star astrometry. Such measurements can yield model-independent distances and velocities that can be exploited, for example, to locate neutron-star birth sites, establish reference-frame ties, model the Galactic electron-density distribution, and constrain the astrophysics of supernova explosions. Recently, the *Fermi* gamma-ray space telescope has identified several highly luminous recycled pulsars, and precise measurement of their distances is of paramount importance to understand their energetics and astrophysics. The ongoing science returns from precision astrometry will continue in the long term with improvements in technology such as focal-plane arrays and synergies with new telescopes such as *Gaia* and the *Square Kilometer Array*.

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