The Precision Frontier of Dark Matter Constraints - from Direct Acceleration Measurements

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Abstract

I will review our work in developing techniques for directly measuring the very small (_˜ 10 cm/s/decade) line-of-sight accelerations of stars that live within the gravitational potential of the Milky Way. I will discuss our recent constraints on the dark matter distribution in the Milky Way from pulsar timing, and review our initial work from our ongoing observational campaigns that also include extreme precision radial velocity observations, and eclipse timing. I will end by discussing how angular accelerations from high precision astrometric missions can aid in the reconstruction of a realistic gravitational potential, along with the line-of-sight acceleration measurements that we are in the process of obtaining.

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