

GRAPPA @ 5: Celebrating 5 years of astroparticle physics and cosmology in Amsterdam



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Gaia and the Local Dark Matter Density

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The local dark matter density is required to interpret results from direct detection experiments, whether they are searching for WIMPs, sterile neutrinos, or axions. Here I give an update to our ongoing project to determine the local DM density using stellar motions and our advanced Jeans equation based analysis. This includes our recent measurement using SDSS-SEGUE G-dwarfs, and a look ahead to the challenges and opportunities of Gaia Data Release 2 in April 2018. Already in our SDSS-SEGUE analysis we see statistical errors becoming comparable to systematic errors caused by, for instance, the assumption of dynamical equilibrium. With the advent of DR2 we will be able to relax these assumptions, and derive a much more robust determination of the local dark matter density.

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