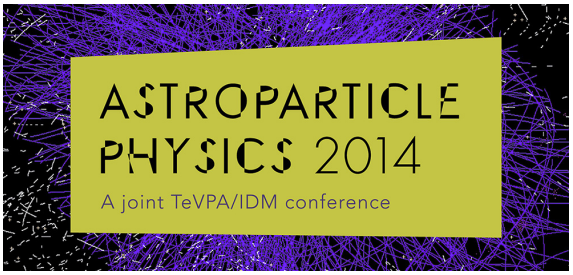

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The Universal Rotation Curve and Dark Matter Halos around Galaxies

Friday, June 27, 2014 2:00 PM (20 minutes)

Recent observations have revealed the structural properties of the dark and luminous mass distribution in spirals. These results led to the vision of a new and amazing scenario. The investigation of single and coadded objects has unanimously shown that the rotation curves of spirals follow, from their centres out to their virial radii, a universal profile. This profile implies a tuned combination of their stellar-gaseous disk and dark halo mass distributions. This, alongside with accurate mass modelling of individual galaxies, poses important challenges to the presently favoured Λ\LambdaCDM Cosmology. The effective circular velocities in large Ellipticals and dwarf spheroidals show similar characteristics. The structural properties of dark matter and its shallow distribution indicates that there is smaller power in the matter fluctuation spectrum at galactic scales than the usual we derive in the framework of a cold collisionless particle. It is interesting to notice that the observed structure of spirals, in the framework of a warm dark matter, points to a particles with 2-3 keV mass.

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