

Dark Matter in galaxies: a review

Wednesday 27 July 2016 11:45 (20 minutes)

Recent observations have revealed the structural properties of the dark and luminous mass distribution in galaxies from dwarfs to giants. Their study led to the vision of a new and amazing scenario. The investigation of single and coadded objects has in fact shown that the rotation curves of spirals follow, from their centers out to their virial radii, an universal profile that implies a tuned combination of their stellar disk and dark halo mass distributions. The mass distribution of ellipticals and dwarf spheroidals is found similar. This, alongside with accurate mass modeling of individual galaxies, poses important challenges to the presently theoretically favored LCDM Cosmology and indicate a surprising direct interaction between the dark and the luminous components.

Based on (arXiv number)

arXiv:1111.1165 , arXiv:astro-ph/0703115, arXiv:1402.2280

Summary

Recent observations have revealed the structural properties of the dark and luminous mass distribution in galaxies from dwarfs to giants. Their study led to the vision of a new and amazing scenario. The investigation of single and coadded objects has in fact shown that the rotation curves of spirals follow, from their centers out to their virial radii, an universal profile that implies a tuned combination of their stellar disk and dark halo mass distributions. The mass distribution of ellipticals and dwarf spheroidals is found similar. This, alongside with accurate mass modeling of individual galaxies, poses important challenges to the presently theoretically favored LCDM Cosmology and indicate a surprising direct interaction between the dark and the luminous components.

Primary author: SALUCCI, Paolo (SISSA)

Presenter: SALUCCI, Paolo (SISSA)

Session Classification: Cosmological Probes of Dark Matter

Track Classification: Cosmological Probes of Dark Matter