

Einasto-like DM profile from finite temperature Scalar Field Dark Matter

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Abstract content

High precision numerical simulations of the Lambda Cold Dark Matter (LCDM) model seem to coincide very well with astronomical observations of galaxies and clusters of galaxies. These dark matter simulations are more close to the Einasto profile in the centre of the galaxies and follow the Navarro-Frenk-White (NFW) one outside the centre. The coincidence is more accurate when the numerical simulations take into account the feedback. Nevertheless, observations in the LHC have shown that the dark matter particles predicted by supersymmetry are not in the expected energy range. This gives the possibility to look for alternatives. In this talk we show how finite temperature Scalar Field Dark Matter (SFDM), where the dark matter particle is a scalar field, gives a dark matter profile that is very similar to the Einasto one in the centre of the galaxies and to the NFW profile outside of the centre, like the astronomical observations. We also show that the difference between these two models is that the SFDM model predicts bigger galaxies at bigger redshifts than the LCDM one.

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