



ASTROPHYSICS SEMINARS

****SPECIAL SEMINAR****

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*Einasto-Like Profile from Finite
Temperature Scalar Field Dark Matter*

4.30pm, Tuesday 10 July 2012

Martin Ryle Seminar Room, Kavli Institute

Abstract:

It is well known that the LCDM model is facing some inconsistencies with observations. The scalar field dark matter (SFDM) model is an alternative to LCDM. This model proposes that galaxies form by condensation of a scalar field with an ultra-light mass of the order of $m \sim 1e-22eV$. From this mass it follows that the critical temperature of condensation $T_c \sim TeV$, therefore they form Bose-Einstein Condensate drops very early in the universe. These drops are the haloes of the galaxies. This implies that galaxies should all have similar features and that there should exist well-formed galaxy haloes at bigger redshifts than in the LCDM model. Big structures in the universe form like in the LCDM model, by hierarchy. Thus, all predictions of the LCDM model at cosmological scales are reproduced very well by the SFDM. Their wave properties avoid the cusp in the centre of the galaxies, therefore, rotation curves of big, dwarf and LSB galaxies fit well with SFDM. This model has a natural cut off in the mass power spectrum, thus substructure in clusters of galaxies is avoided naturally and the amount of satellite galaxies around big ones can be fitted without problem.

All are welcome to attend

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