



Astrophysics > Cosmology and Extragalactic Astrophysics

Fitting dwarf galaxy rotation curves with conformal gravity

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We continue our study of the application of the conformal gravity theory to galactic rotation curves. Previously we had studied a varied 111 spiral galaxy sample consisting of high surface brightness galaxies, low surface brightness galaxies and dwarf galaxies. With no free parameters other than galactic mass to light ratios, we had found that the theory is able to account for the systematics that is observed in the entire set of galactic rotation curves without the need for any dark matter whatsoever. In the present paper we extend our study to incorporate a further 27 galaxies of which 25 are dwarf galaxies and provide updated studies of 3 additional galaxies that had been in the original sample, and again without dark matter find fully acceptable fits, save only for just a few galaxies that we find to be somewhat troublesome. Our current study brings to 138 the number of rotation curves of galaxies that have been accounted for by the conformal gravity theory. Since one of the primary ingredients in the theory is a universal contribution to galactic motions coming from matter exterior to the galaxies, and thus independent of them, our study reinforces one of the central concepts of the conformal gravity studies, namely that invoking dark matter should be viewed as being nothing more than an attempt to describe global physics contributions in purely local galactic terms.

Comments: 19 pages, 37 figures, revtex4. Updated version with 6 new galaxies to bring total in paper to 30 galaxies

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