

Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Alternative Gravity Rotation Curves for the LITTLE THINGS Survey MODESTAS STULGE, BRIAN STEFANSKI, JEREMY DENTICO, JAMES O'BRIEN, JOSEPH GAY, Wentworth Institute of Technology, ROBERT MOSS, MIT Lincoln Laboratories, BRYAN YOUNG, ADAM SMITH, Wentworth Institute of Technology — Galactic rotation curves have proven to be the testing ground for dark matter bounds in spiral galaxies of all morphologies. Dwarf Galaxies serve as an increasingly interesting testing ground of rotation curve dynamics due to their increased stellar formation and typically rising rotation curve. These galaxies usually are not dominated by typical stellar structure and mostly terminate at small radial distances. This, coupled with the fact that Cold Dark Matter theories such as NFW (Λ CDM) struggle with the universality of galactic rotation curves, allow for exclusive features of alternative gravitational models to be analyzed. Recently, the THINGS (The HI Nearby Galactic Survey) has been extended to include a sample of 25 dwarf galaxies now known as the LITTLE THINGS Survey. Here, we present a thorough application of alternative gravitational models to the LITTLE THINGS survey, specifically focusing on MOND and Conformal Gravity. An analysis and discussion of the results of the fitting procedure of the two alternative gravitational models are explored. We posit here that both the Conformal Gravity and MOND can provide an accurate description of the galactic dynamics without the need for copious dark matter.

Modestas Stulge
Wentworth Institute of Technology

Date submitted: 05 Jan 2016

Electronic form version 1.4