Scalar Tensor Vector Gravity

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Abstract

Scalar Tensor Vector Gravity (STVG) is a metric theory of gravity with dynamical scalar fields and a massive vector field introduced in addition to the metric tensor. In the weak field approximation STVG modifies the Newtonian acceleration with a Yukawa like repulsive term due to Maxwell-Proca type Lagrangian. This associates matter with a fifth force and a modified equation of motion. STVG has been successful in explaining galaxy rotation curves, gravitational lensing, cosmological observations and all other solar system observation without the need of dark matter. In this talk we present the key concepts of STVG theory. Then I will discuss existing observational bounds on STVG parameters. In particular I will present our original results obtained from X-COP sample of galaxy clusters.