

# Vulcano Workshop 2014 - Frontier Objects in Astrophysics and Particle Physics



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## **An alternative gravity model with a non-minimal coupling between matter and curvature**

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We examine an extension of General Relativity with an explicit non-minimal coupling between matter and curvature. The purpose of this work is to present an overview of the implications of the latter to various contexts, ranging from astrophysical matter distributions to a cosmological setting. Various results are discussed, including the impact of this non-minimal coupling on the choice of Lagrangian density, on a mechanism to mimic galactic and cluster dark matter, on the possibility of accounting for the accelerated expansion of the Universe, energy density fluctuations and modifications to post-inflationary reheating, and the equivalence between this model and multi-scalar-theories.

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