

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



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## Open Problems in Gravitational Physics

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Extended gravity models have recently attracted a lot of interest as alternative candidates to explain the observed cosmic acceleration, the flatness of the rotation curves of spiral galaxies, the gravitational potential of galaxy clusters, and other relevant astrophysical phenomena. Very likely, what we call “dark matter” and “dark energy” are nothing else but signals of the breakdown of General Relativity at large scales and could be interpreted as a sort of “curvature effect”. Furthermore, PPN-parameters deduced from Solar System experiments and strong field astrophysical phenomena (compact objects, magnetars and neutron stars) do not exclude the possibility that such theories could give other observable effects. We review these results discussing open problems in gravitational physics.

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