PROCEEDINGS OF SCIENCE

From DGT to dRGT: a review of "massive gravity" theories

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Motivated in part by the wish to "replace" dark energy by a large distance modification of gravity, a large body of works has lead to a better understanding of properties and pathologies of theories of "massive gravity", and closely related models such as "Galileons". This body mainly developped from the Dvali-Gabadadze-Porrati (DGP) model which was proposed almost 15 years ago - and was the first framework which linked explicitly the cosmic acceleration with a large distance modification of gravity - and culminated with the more recent de Rham-Gabadadze-Tolley (dRGT) theory which is now believed to avoid certain pathologies present in previous constructions. Inbetween, these works also lead to several other proposals, many of which using the "Vainshtein mechanism" to hide at intermediate distances effects which only show up at cosmological scales. I will review these works stressing in particular the left over open questions.

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