Contribution ID: **143** Type: **20 minutes talk**

Fifth forces in scalar-tensor theories and how to avoid them

Thursday, 16 December 2021 15:30 (30 minutes)

The Einstein-Hilbert action is well known as the standard choice when model-building theories of gravity. However, couplings between scalar fields and the space-time curvature regularly arise in string theory and cannot be avoided when RG running standard theories of gravity in the presence of additional scalar fields. The resulting theories are usually referred to as scalar-tensor theories and generally exhibit fifth forces. In this talk, I will show that, by treating the symmetries of the modified action consistently, we can perturb the gravitational sector in the weak-field limit and calculate scattering amplitudes directly in the so-called Jordan frame. By studying the linearised Lagrangian, we can then understand the origin of fifth forces and show the pivotal role that scale symmetries play in determining the strength of their couplings to matter, thereby allowing certain models to evade experimental tests of gravity.

Could you please give the most relevant category for your talk?

Phenomenology

Will you be pre-recording your talk?

No

Would you be interested in receiving feedback on your presentation?

Yes

Are you happy for your talk to be recorded?

Yes

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