Proca seminars series



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Symmetric teleparallel gravity - the limit of a Proca theory?

Thursday 25 November 2021 10:00 (1 hour)

Abstract: Alternative geometrical formulations of General Relativity, and the corresponding alternative interpretations of the gravitational interaction, are reviewed. It is shown that General Relativity can be understood as an integrable gauge theory of translations in the "symmetric teleparallel" geometry. This framework allows the canonical resolution of the long-standing foundational problem of the localisation of gravitational energy. The resolution is clarified from the perspectives of the Noether theorems and the pre-metric formalism. The integrability (i.e. flatness, or "teleparallelism") is the property of a massive connection at large distances. This suggests the natural interpretation of teleparallel gravity as the limit of a (non-Abelian generalisation of) Proca theory, where the Planck mass is the mass of the connection. Spacetime has a resolution limit, since the integrability breaks down at microscopic distances near the Planck scale.

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