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A non-relativistic vivisection of 11-dimensional supergravity

Thursday 12 January 2023 11:50 (30 minutes)

Non-relativistic limits of string and M-theory offer a way to (in principle) explore non-relativistic quantum gravity. In this talk I will focus on the realisation of such a limit for 11-dimensional supergravity. Bosonically this results in a non-Lorentzian “membrane Newton-Cartan geometry” with the local tangent space split into three “longitudinal” and eight “transverse” directions, related by Galilean rather than Lorentzian symmetries. Consistency of the limit and its compatibility with local supersymmetry imposes additional constraints on this geometry, and reveals a surprising and intricate non-relativistic supergravity theory in a sense lurking within the (famously unique) relativistic theory. I will explain how this works, and discuss the relationship to the duality web of both relativistic and non-relativistic theories. Based on upcoming work with E. Bergshoeff, J. Lahnsteiner and J. Rosseel.

Presenter: BLAIR, Chris (IFT-UAM/CSIC)

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