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String Theory in Greater Paris

Rencontres Théoriciennes

“Supergravité, théorie des cordes et théorie M”

Jeudi 20 Octobre 2022, 11:45

Alvaro Herraez

IPhT Saclay

The Emergence Proposal in Quantum Gravity and the Species Scale

The Emergence Proposal claims that in Quantum Gravity the kinetic terms of all the the fields in the IR emerge from integrating out (infinite) towers of particles up to the QG cutoff. After introducing this proposal in the context of the Swampland Program and its relation to the Distance and Weak Gravity Conjectures, I will explain why it is natural to identify this QG cutoff with the Species Scale, motivating it by direct computation in the presence of the relevant towers. Then, I will present evidence for this proposal by directly studying how it is realized in different string theory setups, where the kinetic terms of scalars, p-forms and even scalar potentials can be shown to emerge after integrating out such towers.

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