Type: Parallel session talk

## **Exotic supergravities and the Swampland**

Tuesday, 25 June 2024 17:00 (15 minutes)

In six dimensions, there is an exotic N=(4,0) supermultiplet that contains only fields of spin  $\le 2$ , but no graviton, and that on a circle reduces to 5D N=4 supergravity. It has been proposed that, if suitable interactions exist, the (4,0) theory might provide a consistent alternative UV completion for N=4 5D supergravity, realizing a supersymmetric version of asymptotic safety. We argue that any Lorentz-invariant (4,0) theory (interacting or not) carries an exact global symmetry when compactified on S1, and is therefore incompatible with the Swampland no global symmetries conjecture. Another example of exotic supergravity, the 6D (3,1) theory, does not have this problem. We study the general case and find that the only exotic spin-2 field that reduces to Einsteinian gravity and has no global symmetries when compactified on a high-dimensional torus is that of the (3,1) theory. All other possibilities either yield several gravitons or have global symmetries.

Presenter: TARTAGLIA, Michelangelo
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