NEW YORK CITY COLLEGE OF TECHNOLOGY
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Vanishing dimensions: Theory and Phenomenology

Presented by:

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Abstract

Lower-dimensionality at higher energies has manifold theoretical advantages as we recently pointed out. Moreover, it appears that experimental evidence may already exist for it - a statistically significant planar alignment of events with energies higher than TeV has been observed in some earlier cosmic ray experiments. If this alignment is not a fluke, then the LHC should be able to see effects associated with the dimensional crossover. Further, (2+1)-dimensional spacetimes have no gravitational degrees of freedom, and gravity waves cannot be produced in that epoch in the early universe. This places a universal maximum frequency at which primordial gravity waves can propagate, which may be accessible to future gravitational wave detectors such as LISA. In this talk, the theoretical motivation for "vanishing dimensions" as well as generic experimental and observational signature will be discussed.