

Sommerfeld Theory Colloquium

Wednesday, 4th November 2020
at 16.15 h

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"Playing with the building blocks of the Universe"

The conventional models of high energy physics place the elementary particles on a fixed or slowly evolving, nearly flat, spacetime geometry.

The space foam predicted for quantum theory of gravity by A.Wheeler and S.Hawking gives a very different picture of the small scale structure

of spacetime, with Planck size black holes popping out of vacuum here and there. Recent discoveries in astronomy and astrophysics, the detection of gravitational waves, exploration of Sgr A* , have confirmed the existence of enormous black holes, yet quantum size black holes remain the subject of theoretical amusement. I

describe a vast class of statistical mechanical models, which, on the one hand, perform exact calculations in supersymmetric field theories in various dimensions, whose thermodynamic limit, on the other hand, can be interpreted as describing fluctuating geometry, an 'emergent gravity'. The configurations of these models are the arrangements of (hyper)cubes, hence the title.

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Prof. Ivo Sachs