LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

ARNOLD SOMMERFELD CENTER FOR THEORETICAL PHYSICS

Arnold Sommerfeld Lecture Series

Professor Hirosi Ooguri

Caltech & IPMU, Tokyo University

Research seminar:

Symmetry Resolution at High Energy

The density of states of a unitary quantum field theory is known to have a universal behavior at high energy. In two dimensions, this behavior is described by the Cardy formula. When the theory has symmetry, it is interesting to find out how the Hilbert space is decomposed into irreducible representation of the symmetry. In this talk, I will derive universal formulas for the decomposition of states at high energy with respect to both internal global symmetry and spacetime symmetry. The formulae are applicable to any unitary quantum field theory in any spacetime dimensions. As a byproduct, we resolve one of the outstanding questions on the stability of non-abelian black holes. We will also derive the high energy asymptotic behavior of correlation functions. (Based on work with Nathan Benjamin, Daniel Harlow, Monica Kang, Jaeha Lee, Sridip Pal, David Simmons-Duffin, Zhengdi Sun, and Zipei Zhang.)

Friday, June 30, 2023, 10:15 h, Room A348, Theresienstr. 37, LMU, and via Zoom

Dieter Lüst