

Theoretical Physics Seminar

Monday, October 14, 2019 / Pupin Hall Theory Center, 8th Floor / 2:10 PM

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"Conformal Bootstrap for High-Energy States"



We analyze modular invariance and crossing symmetry drawing inspiration from tauberian theorems. Given a modular invariant partition function with a positive spectral density, we derive lower and upper bounds on the number of operators within a given energy interval. They are most revealing at high energies. In this limit we rigorously derive the Cardy formula for the microcanonical entropy together with optimal error estimates for various widths of the averaging energy shell. We identify a new universal contribution to the microcanonical entropy controlled by the central charge and the width of the shell. We derive an upper bound on the spacings between Virasoro primaries. Time permitting, analogous results in holographic CFTs and in higher dimensions will be discussed.