

Photon sphere and quasinormal modes in AdS/CFT

Wednesday, 29 November 2023 14:00 (15 minutes)

Photon spheres are the characteristic of general black holes, thus are a suitable touchstone for the emergence of gravitational spacetime in the AdS/CFT correspondence. We provide a spectral analysis of an AdS Schwarzschild black hole near its photon sphere. We find that quasinormal modes near the photon sphere reflect the AdS boundary, resulting in a peculiar spectral pattern. Our large angular momentum analysis owes to an analogue to solvable Schrödinger equations such as an inverted harmonic oscillator and the Pöschl-Teller model, with a Dirichlet boundary condition. Through the AdS/CFT dictionary, it predicts the existence of a peculiar subsector in the large angular momentum spectrum of thermal holographic CFTs on a sphere. This talk is based on arXiv:2307.00237 with Koji Hashimoto, Katsuyuki Sugiyama, and Takuya Yoda.

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