

Pseudospectra of Holographic Quasinormal Modes

Thursday 21 December 2023 10:30 (45 minutes)

Quasinormal modes and frequencies are the eigenvectors and eigenvalues of a non-Hermitian differential operator. They are of crucial importance in the physics of black holes. The analysis of quasinormal modes in asymptotically Anti-de Sitter geometries plays also a key role in the study of strongly coupled quantum many-body systems via gauge/gravity duality. In contrast to normal Sturm-Liouville operators, the eigenvalues of non-Hermitian (and non-normal) operators generally exhibit instability under small perturbations. After a brief review of quasinormal modes I will discuss the stability analysis of quasinormal frequencies for asymptotically planar AdS black holes based on pseudospectrum analysis. Specifically, we concentrate on the pseudospectra of scalar and transverse gauge fields, shedding light on their relevance within the framework of gauge/gravity duality.

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