Wormholes in (2 + 1)-gravity: Quasinormal modes and causality

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A static wormhole in anti-de Sitter (2 + 1)-gravity, sourced by a nonlinear electromagnetic field is perturbed with a massive scalar field and the resulting quasinormal modes are determined in exact form, for the appropriate boundary conditions. The frequencies are real, meaning that the system is non dissipative, in contrast to a black hole. We also construct the corresponding Kruskal-Szekeres diagram showing the maximal extension of the wormhole as well as its Penrose diagram.

This is joint work with Pedro Cañate and Leonardo Ortiz.

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