



Contribution ID: 109

Type: Talk in the parallel session

Gravitational perturbations in the Newman-Penrose formalism: Applications to wormholes

Wednesday, 7 July 2021 08:15 (15 minutes)

In this work we study the problem of linear stability of gravitational perturbations in stationary and spherically symmetric wormholes. For this purpose, we employ the Newman-Penrose formalism which is well-suited for treating gravitational radiation in General Relativity, as well as the geometrical aspect of this theory. With this method we obtain a “master equation” that describes the behavior of gravitational perturbations that are of odd-parity in the Regge-Wheeler gauge. This equation is later applied to a specific class of Morris-Thorne wormholes. The analysis of the equation yielded by this class of space-times reveals that there are no unstable vibrational modes generated by the type of perturbations here studied.

Primary authors: DEL ÁGUILA RODRÍGUEZ, Juan Carlos (Centro de Investigación y de Estudios Avanzados del I.P.N.); Dr MATOS , Tonatiuh (Cinveatav-IPN)

Presenter: DEL ÁGUILA RODRÍGUEZ, Juan Carlos (Centro de Investigación y de Estudios Avanzados del I.P.N.)

Session Classification: Wormholes, Energy Conditions and Time Machines

Track Classification: Alternative Theories: Wormholes, Energy Conditions and Time Machines