

The conundrum of tidal Love number

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Tidal Love numbers provide us a handle to test the nature of compact objects, as well as theories of gravity. There have been several clarifications recently, which makes our understanding of these Love numbers better. But further investigations have led to more confusion. I plan to discuss these recent developments and the confusing nature of recent literature on these issues. I will show that the tidal Love numbers of a non-rotating black hole identically vanishes, but for a rotating black holes things are not so straightforward. Besides black holes, I will also highlight some remarkable novel features, for ultra-compact objects with non-trivial reflectivity.

Primary author: CHAKRABORTY, Sumanta (Indian Association for the Cultivation of Science)

Co-authors: Dr MAGGIO, Elisa; Prof. PANI, Paolo; Mr BHATT, Rajendra; Mr NAIR, Sreejith; Prof. SARKAR, Sudipta; Prof. BOSE, Sukanta

Presenter: CHAKRABORTY, Sumanta (Indian Association for the Cultivation of Science)

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