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G. Castro: Rotational tidal Love numbers and their impact on compact object inspirals

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The coupling between the angular momentum of a compact object and an external tidal field gives rise to the “rotational” tidal Love numbers, which affect the tidal deformability of a spinning self-gravitating body and enter the gravitational waveform of a binary inspiral at high post-Newtonian order. In this talk I will present an unexpected symmetry of these quantities in slowly-rotating neutron stars and how they are expected to hold for generic compact objects. I will also show how the rotational tidal Love numbers of neutron stars will become relevant in the near-future given the expected accuracy of third-generation detectors, as well as what lessons we should take from this in future studies of tidal deformability of compact objects.

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