THE CHINESE UNIVERSITY OF HONG KONG
Department of Physics
SEMINAR

Tidal Love Numbers of Black Holes and Implications from the Weak Gravity Conjecture

by

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ALL INTERESTED ARE WELCOME
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Abstract

The Weak Gravity Conjecture indicates that extremal black holes in the low energy effective field theory should be able to decay. This criteria gives rise to non-trivial constraints on the coefficients of higher-order derivative corrections to gravity. We will discuss the tidal deformability of neutral black holes due to higher-order derivative corrections. As a case in point, we consider a correction of cubic order in the Riemann curvature tensor. The tidal Love numbers of neutral black holes receive leading order correction from higher-order derivative terms since black holes in pure General Relativity have vanishing tidal Love numbers. We conclude that the tidal deformability of neutral black holes is constrained by the Weak Gravity Conjecture, and therefore provides a test for quantum gravity.

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