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Impact of Resonances and Chaos on Gravitational Waves from Extreme Mass Ratio Inspirals

Extreme Mass Ratio Inspirals (EMRIs) are one of the prominent sources for gravitational wave detection by the Laser Interferometer Space Antenna (LISA). EMRIs consist of a stellar compact object inspiralling into a supermassive black hole due to gravitational radiation reaction. During this process the stellar object traces the background and the gravitational waves it emits carry away the information about the central black hole. When an EMRI gravitational signal is detected we will be able to test our understanding of strong gravity to unrivaled precision. However, there are physical factors introducing phenomena that might render EMRIs not detectable. We will discuss this issue by presenting the factors inducing effects like prolonged resonances and chaos. We will show what is the impact of these effects on gravitational waves and how they can be detected.

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