Abstract

In this thesis, we probe several aspects of compact binary environments, focusing on results of orbits and collisions of compact objects. First, we describe a search for low-mass compact-binary-coalescence gravitational-wave signals in data from the LIGO detectors' most sensitive, longest-running science run to date (S5). We also go into detail on the interpretation of the results including its development. We then investigate the bounds on the mass of the graviton that could be achieved from the detection gravitational waves from a binary black hole merger. Last, we study the flow of momentum in compact binaries using the Landau-Lifshitz formalism.