



COMPACT OBJECTS AND HOW TO MODEL THEM

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Compact objects are one of the most interesting laboratories to test physics in our universe, allowing us to explore the interconnection between strong-gravity, astrophysics and fundamental physics. This course will offer a comprehensive review of compact objects, focusing on the theoretical frameworks and modeling techniques essential for understanding these celestial bodies. We will begin with an introduction to compact objects, where we will see how to classify them and review their importance in the context of astrophysics. The course will continue by exploring the frameworks used for modeling these objects, starting with a review of classic results in General Relativity as applied to self-gravitating fluids. We will extend this discussion to other types of matter that are used to study hypothetical "exotic" compact objects, such as anisotropic fluids, fields, and elastic materials.