

## Moduli Stars

*Tuesday 25 June 2019 15:00 (15 minutes)*

The recent direct detection of gravitational waves (GWs) has opened a new window of observation for physical phenomena in which gravity is the dominant interaction. Collisions of black holes and neutron stars have been observed and a plethora of new events, even involving new physics, are expected to be detected in the next few years. It is natural to explore alternative physical objects that may exist which are different from the standard stars and black holes and that could lead to particular imprints on the GW spectrum. In this talk I will explore the possibility that moduli (gravitationally coupled scalar fields arising in all string compactifications) can compose compact objects (moduli stars) whose dynamics gives rise to GW production. I will illustrate their formation in the early universe, that was studied through lattice techniques. After their formation moduli stars can have very different behaviours, e.g. they could rapidly collapse to black holes or disperse into scalar radiation. I will describe the fate of moduli stars, that was investigated through numerical relativity techniques.

**Presenter:** Dr MUIA, Francesco

**Session Classification:** Parallel Session