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## **Stirred and shaken: dynamical behavior of boson stars and dark matter cores**

*Thursday, 25 June 2020 10:35 (12 minutes)*

The nature and properties of dark matter are arguably among the most important open issues in science. Interesting candidates for dark matter include light bosonic fields. Such scalar fields can give rise to confined structures, as boson stars or Q-balls. Boson stars are interesting hypothetical new “dark matter stars”, but also good descriptions of dark matter haloes when the fields are ultralight. In this talk, I’m going to focus on the dynamical response of Newtonian bosonic structures when excited by external matter (stars, planets or black holes) in their vicinities. The study of the dynamics of such bodies is important for a number of reasons, ranging from stability to the way they interact with surrounding objects (stars, planets or black holes etc.). Among others issues, I am going to describe the local changes in the density of a dark matter halo triggered by the presence of a massive black hole or a star, the drag exerted by the bosonic clump on stars moving within it, the flux of energy and momentum induced by coalescing binaries, etc. I will provide a complete picture of the interaction between black holes or stars and the ultralight dark matter environment they live in.

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