

## Spanish and Portuguese Relativity Meeting



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# Gravitational microlensing with extended dark matter structures [remote]

*Tuesday 23 July 2024 11:00 (40 minutes)*

Many models of dark matter feature small scale substructure in the form of sub haloes, boson stars, or mini-clusters. In this talk, I will describe how gravitational microlensing can be used to probe such models. In particular, I will explain how existing techniques used to constrain point-like objects (such as primordial black holes) can be adapted to find constraints on several different extended objects, using data from EROS-II, OGLE, and Subaru-HSC experiments. For particular mass distributions, such as those expected from boson stars, optical effects such as caustics imply a unique shape of the light curve, which may be looked for using machine learning methods. I will explain under what circumstances positive detections of such objects can be made and describe an ongoing analysis for their detection using the Vera Rubin Observatory's Legacy Survey of Space and Time.

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