

## Probing dark matter halos with extreme mass ratio inspirals

*Sunday, 29 September 2024 10:50 (30 minutes)*

Using the static and spherically symmetric metric for a black hole immersed in dark matter (DM) halos with Hernquist, Burkert, and Navarro-Frenk-White density distributions, we study the possibility of the detection of DM halos and the distinction between different DM halos with the extreme mass ratio inspiral systems (EMRIs). We also consider gravitational waves from the EMRIs consisting of primordial black holes inspiralling inside neutron stars within the Galaxy to probe the internal structure of neutron stars.

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