

Dark matter and black holes



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A Dark Matter Probe in Accreting Pulsar–Black Hole Binaries

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The accretion of dark matter (DM) into astrophysical black holes slowly increases their mass. The rate of this mass accretion depends on the DM model and the model parameters. If this mass accretion effect can be measured accurately enough, it is possible to rule out some DM models, and, with the sufficient technology and the help of other DM constraints, possibly confirm one model. We propose a DM probe based on accreting pulsar-black hole binaries, which provide a high-precision measurement on binary orbital phase shifts induced by DM accretion into black holes, and can help rule out DM models and study the nature of DM.

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