Primordial black holes in the era of Roman

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Primordial black holes (PBHs) are a well-motivated candidate for dark matter that may constitute a subfraction of the dark sector in the Earth-mass range. The strongest observational probe of this population is through gravitational microlensing, an effect in which the bending of light by a massive object results in the apparent transient magnification of a distant source. While ground-based observatories have produced tantalizing hints of a PBH population in this mass range, our understanding of this potential signal will be transformed with the launch of the Roman Space Telescope in 2026, whose Galactic Bulge Time Domain Survey will usher in a new era of discovery in this field. In this talk, I will discuss how by leveraging the high-statistics observations that Roman will make, we will be able to discern multiple subpopulations of nonluminous lenses and provide a new window into the existence of macroscopic dark matter.

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