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The Origin of Supermassive Black Holes

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The origin of supermassive black holes remains a major outstanding issue in modern astrophysics. These monster black holes reside in the nuclei of essentially every massive galaxy and power the most luminous quasars at the edge of the observable Universe. However, directly observing the first “seed” black holes in the earlier Universe - that can eventually grow to upwards of a billion solar masses - is not feasible with current telescopes. Present-day dwarf galaxies, on the other hand, are within observational reach and offer another avenue to learn about black hole seeds since low-mass galaxies can host relatively pristine black holes. In this talk, I will highlight some of my recent achievements in this field that have taken us from a few rare examples to large systematically-assembled samples of dwarf galaxies hosting nuclear black holes. I will also discuss how my work has implications for directly detecting black hole activity in the first galaxies in the earlier Universe.