



PHYSICS AND ASTRONOMY SEMINAR

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HIA

The First Stars and the Birth of the Most Massive, High-redshift Quasars

The discovery of billion-solar-mass quasars at redshifts of 6–7 challenges our understanding of the early Universe — how did such massive objects form in the first billion years, and what can this tell us about their environments at Cosmic Dawn? Observations and theory increasingly favour a "heavy seed" or "direct collapse" scenario, in which the rapid accretion possible in some primordial, atomic-cooling halos leads to the formation of uniquely supermassive objects, which collapse to form initially-massive ($\sim 100,000$ solar mass) black holes. In this talk, I'll present systematic, self-consistent simulations of the evolution of these objects under realistic formation conditions, and propose observational diagnostics to decisively test the origin of high- z quasars using next generation facilities. I'll also discuss the expected multiplicity of such supermassive stars and their subsequent interactions, as well as the unique observational signatures of primordial stellar populations which are intermediate in mass between supermassive objects and "typical" Pop III stars in the era of JWST and beyond.

Monday, March 15, 2021

2:00 p.m.

Zoom link: <https://uvic.zoom.us/j/82203756592>