

Abstract Submitted
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Black Holes From Atomic Dark Matter¹ MICHAEL RYAN, JAMES GURIAN, SARAH SHANDERA, DONGHUI JEONG, Pennsylvania State University — Dissipative dark matter models provide a solution to the dark matter problem with the further intriguing possibility that small dark matter halos can directly collapse into dark black holes with a unique mass spectrum. Prior literature has demonstrated the ability to form such objects using the dark atomic model in the simplest analytic case, analogous to Population III star formation. We present here the next level check of dark black hole formation, tracking the evolution of a simple halo collapse scenario using our extension of the KROME astrochemical software package that includes dark atomic and molecular processes. Our results demonstrate the importance of including molecular processes in these analyses as well as the strong dependence on the molecular properties.

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