

Abstract Submitted
for the 4CS20 Meeting of
The American Physical Society

Investigation into Length Scale Dominance in Critical Black Hole Formation COLE KELSON-PACKER, JOHN BELZ, University of Utah — The critical formation of low-mass black holes is a historical cornerstone of numerical General Relativity, with important implications in cosmology for censorship conjectures and the production of primordial black holes. Concurrent with the surge in black hole observational physics in recent years has been an increased interest in these subjects. Critical formation is often suggested as a mechanism for primordial black hole production, but it is possible that the coexistence of different critical processes accompanying more realistic scenarios may affect this conclusion. The presenters have numerically investigated, as a toy model, the interplay of multiple near-critical fields in the collapse of spherically symmetric scalar field configurations. The presenters have found that a combination of type I and type II near-critical fields exhibits competition between their respective critical evolutions. This presentation summarizes the history and underlying techniques going into the investigation, discusses its results, and proposes a heuristic explanation for the phenomena observed employing ideas from the theory of dynamical systems.

Cole Kelson-Packer
University of Utah

Date submitted: 24 Sep 2020

Electronic form version 1.4