Theoretical Considerations for Black Hole Formation in Supernova Ejecta ANDREW HAYES, University of Maine — We present a method for detecting regions within a dataset from a simulation of a high energy astrophysical event, such as a supernova, that are unstable to gravitational collapse. This method can be used where the resolution, spatial domain, and/or time span of the simulation may not be sufficient to evolve the region to gravitational collapse natively. The accuracy of the method is demonstrated by applying it to various spherical mass distributions whose stability is known through other means. We have already used the method in the analysis of datasets from three simulations, with negative results. We also discuss the consequences of the ongoing production of low-mass, high-velocity black holes.

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