Numerical Tests of the Cosmic Censorship Conjecture with Collisionless Matter Collapse[1] MARIA OKOUNKOVA, DANIEL HEMBERGER , MARK SCHEEL, California Institute of Technology — We present our results of numerical tests of the weak cosmic censorship conjecture (CCC), which states that generically, singularities of gravitational collapse are hidden within black holes, and the hoop conjecture, which states that black holes form when and only when a mass M gets compacted into a region whose circumference in every direction is $C \leq 4\pi M$. We built a smooth particle methods module in SpEC, the Spectral Einstein Code, to simultaneously evolve spacetime and collisionless matter configurations. We monitor $R_{abcd}R^{abcd}$ for singularity formation, and probe for the existence of apparent horizons. We include in our simulations the prolate spheroid configurations considered in Shapiro and Teukolsky's 1991 numerical study of the CCC.

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