

Abstract Submitted
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Inside the Final Black Hole¹ BHAVESH KHAMESRA, DEBORAH FERGUSON, CHRISTOPHER EVANS, PABLO LAGUNA, DEIRDRE SHOE-MAKER, School of Physics, Georgia Institute of Technology — In numerical relativity simulations of binary black holes, the appearance of a common apparent horizon signals the merger of the black holes and thus the formation of the final black hole. At this stage, the final black hole is fully dynamical and highly distorted, emitting gravitational radiation as it settles into a single rotating black hole of the Kerr type. When the common apparent horizon appears, the apparent horizons of the merging black holes do not disappear, although they are no longer outermost marginally trapped surfaces. We present results of the dynamics of the marginally trapped surfaces inside the final black hole that before the merger were the apparent horizons of the colliding black holes. The results provide insights on the formation of the common apparent horizon, as well as the internal structure and the dynamical horizon of the final black hole.

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