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Black Hole Formation in Randall-Sundrum Braneworld II DAOYAN WANG, MATTHEW W. CHOPTUIK, University of British Columbia — We present the results from a numerical study of the gravitational collapse of a massless scalar field within the framework of the Randall-Sundrum II braneworld model. The calculations are fully coupled so that the nonlinear dynamics of the brane, the matter confined to it, and the bulk, are all treated self-consistently. We show that evolutions of sufficiently strong initial configurations of scalar field generate black holes which extend into the bulk and which overall have spherical topology. Using distinct initial data sets that result in black holes with similar physical properties, we find preliminary evidence for a no-hair property for the black holes in this scenario. Additionally, we show that the black hole solutions generated from the dynamical system, are consistent with those recently computed from a static ansatz applied to the vacuum model.

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