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How to move a black hole JAMES VAN METER, JOHN BAKER, JOAN CENTRELLA, DAE-IL CHOI, MICHAEL KOPPITZ, NASA/GSFC — Recent demonstrations of uncexcised, puncture black holes traversing freely across computational grids represent a revolutionary advance in numerical relativity. Stable and accurate simulations of multiple orbits, and their radiated waves, have resulted. This capability is critically undergirded by careful choices of gauge and formulation of the evolution equations. Here we describe the relevant techniques, analytically justify their necessity, and numerically demonstrate their efficacy.

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