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Numerical simulations of binary black holes for GW170104 CARLOS LOUSTO, JAMES HEALY, JACOB LANGE, RICHARD O'SHAUGHNESSY, Rochester Inst of Tech — In response to LIGOs observation of GW170104, we performed a series of full numerical simulations of binary black holes, each designed to replicate likely realizations of its dynamics and radiation. These simulations have been performed at multiple resolutions to solve Einsteins equations. For the nonprecessing and precessing simulations, we demonstrate the precision of the simulations is substantially in excess of what is needed to explain LIGOs observations. Conversely, we demonstrate our full numerical solutions contain information which is not accurately captured with the approximate phenomenological models commonly used to infer compact binary parameters. To quantify the impact of these differences on parameter inference for GW170104 specifically, we compare the predictions of our simulations and these approximate models to LIGOs observations of GW170104.

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