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Initial Data for the Gravity Dual in an AdS/CFT Correspondence

HANS BANTILAN, FRANS PRETORIUS, Princeton University — The AdS/CFT correspondence conjectures that a gauge theory admits a dual gravity description in a negatively curved spacetime. In particular, it has been conjectured that aspects of heavy-ion collisions described by QCD are dual to black hole collisions in 5-dimensional anti-de Sitter (AdS) space. BH-BH collisions have received a lot of attention in the field of numerical relativity, in the context of the gravitational waves generated in their inspiral phase and upon merger. By taking advantage of techniques in numerical relativity to simulate 5-dimensional AdS, it is hoped that we can learn a bit more about heavy-ion physics, and perhaps more about the AdS/CFT correspondence in the process. I will describe steps that are being taken in this direction, first focusing on motivations, then on results, with an emphasis on the initial data we generate for preliminary simulations of the gravity dual.

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