Abstract Submitted
for the APR11 Meeting of
The American Physical Society

Simulation of Asymptotically AdS Spacetimes with a Generalized Harmonic Evolution Scheme HANS BANTILAN, Princeton University — Motivated by the gauge/gravity duality, we introduce a numerical scheme based on generalized harmonic coordinates to solve the Einstein field equations on an asymptotically anti-de Sitter spacetime. We work in global AdS_5, which can be described by the $(t, r, \chi, \theta, \phi)$ coordinates adapted to the $R \times S^3$ boundary. We focus on solutions that preserve the SO (3) symmetry that acts to rotate the 2-spheres parametrized by (θ, ϕ). This allows us to study axisymmetric physics in the bulk, corresponding to spherically symmetric physics in the boundary CFT. We present results from an ongoing study of black hole formation and subsequent quasinormal ring-down via scalar field collapse. This ring-down can be interpreted holographically as motions of an otherwise static plasma on S^3, or as perturbations of a radial flow of thermal matter on Minkowski space, and is intended as a precursor to simulations in the gravity dual that have application to heavy-ion collisions.

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Date submitted: 14 Jan 2011 Electronic form version 1.4