Abstract Submitted
for the APR13 Meeting of
The American Physical Society

Scalar Field in AdS: BHs, boson stars and collapse STEVEN LIEBLING, Long Island University — The dynamics of a scalar field in spherically symmetric Anti-de Sitter space have attracted significant interest since the remarkable result of (Bizon & Rostworowski, 2011) showed the existence of a weakly turbulent instability. An initial configuration of scalar field repeatedly travels outward, reflects off the AdS boundary, and implodes through the origin, all the while sharpening under the influence of gravity. In contrast, a stationary configuration of scalar field, namely a boson star, is perturbatively and numerically stable. Finally, if one turns off gravity and instead adds a nonlinear potential via the semilinear wave equation, a similar instability is seen in which even small initial data eventually collapses to form a singularity. If one instead implements a reflecting wall at some finite boundary, dispersion competes with the instability, and one finds a transition below which collapse ceases.

Steven Liebling
Long Island University

Date submitted: 07 Jan 2013 Electronic form version 1.4