

Abstract Submitted  
for the APR07 Meeting of  
The American Physical Society

**Quasilocal Energy Inside the Event Horizon** ANDREW LUNDGREN, Cornell University, BJOERN SCHMEKEL, University of California, Berkeley, JAMES YORK, Cornell University — Pointlike objects cause many of the divergences that afflict physical theories. For instance, the gravitational binding energy of a point particle in Newtonian mechanics is infinite. In general relativity, the analog of a point particle is a black hole and the notion of binding energy must be replaced by quasilocal energy. The quasilocal energy (QLE) derived by York, and elaborated by Brown and York, is finite outside the horizon but it was not considered how to evaluate it inside the horizon. We present a prescription for finding the QLE inside a horizon, and show that it is finite at the singularity for a variety of types of black hole. The energy is typically concentrated just inside the horizon, not at the central singularity.

Andrew Lundgren  
Cornell University

Date submitted: 12 Jan 2007

Electronic form version 1.4