Abstract Submitted
for the APR12 Meeting of
The American Physical Society

Formulation of D-brane Dynamics[1] THOMAS EVANS, Belvidere High School — It is the purpose of this paper (within the context of STS rules & guidelines "research report") to formulate a statistical-mechanical form of D-brane dynamics. We consider first the path integral formulation of quantum mechanics, and extend this to a path-integral formulation of D-brane mechanics, summing over all the possible path integral sectors of R-R, NS charged states. We then investigate this generalization utilizing a path-integral formulation summing over all the possible path integral sectors of R-R charged states, calculated from the mean probability tree-level amplitude of type I, IIA, and IIB strings, serving as a generalization of all strings described by D-branes. We utilize this generalization to study black holes in regimes where the initial D-brane system is legitimate, and further this generalization to look at information loss near regions of nonlocality on a non-ordinary event horizon. We see here that in these specific regimes, we can calculate a path integral formulation, as describing D0-brane mechanics, tracing the dissipation of entropy throughout the event horizon. This is used to study the information paradox, and to propose a resolution between the phenomena and the correct and expected quantum mechanical description. This is done as our path integral throughout entropy entering the event horizon effectively and correctly encodes the initial state in subtle correlations in the Hawking radiation.

[1]Resolution of the Information Paradox

Thomas Evans
Belvidere High School

Date submitted: 03 Jan 2012 Electronic form version 1.4