Abstract Submitted
for the TSS13 Meeting of
The American Physical Society

The Unification of Symmetry and Conservation SERGIO PISSANETZKY, UHCL — The partial order in a causal set model of a dynamical system breaks the symmetry of the original set. A law of conservation must exist. The corresponding conserved quantity must be invariant for all least-action trajectories in state space. An action functional for causal sets is postulated. It defines a metric over causal sets. Its minimization is equivalent to minimizing the free energy and entropy in the system. The result is a grupoid of least-action trajectories, where a block system B can be constructed. B is the unique conserved quantity. In turn, B is a causal set, with its own symmetry and conserved quantities. Iteration yields a unique hierarchy of conserved quantities. This is a new fundamental theory of Physics derived directly from fundamental principles of causality, symmetry, least-action, laws of Thermodynamics, and the postulated action functional. Unlike statistical or differential methods, it allows the dynamics of a system to be described in detail. See: http://www.degruyter.com/view/j/jagi.2012.3.issue-3/issue-files/jagi.2012.3.issue-3.xml

Sergio Pissanetzky
UHCL

Date submitted: 24 Feb 2013 Electronic form version 1.4