TEP Seminar

UCLA

Tuesday, February 6th @ 2pm
Schwinger Lounge

"The action for self-dual p-form gauge fields and the geometry of gravitons"

Chris Hull (Imperial)

Abstract: Sen's action for a p-form gauge field with self-dual field strength coupled to a spacetime metric involves an explicit Minkowski metric in addition to the spacetime metric and the presence of this raises questions as to whether the action is coordinate independent and whether it can be used on a general spacetime manifold. A natural generalisation of Sen's action is presented in which the Minkowski metric is replaced by a second metric on spacetime. The resulting theory is covariant and can be formulated on any spacetime. It describes a physical sector, consisting of the chiral p-form gauge field coupled to the dynamical metric g, plus a shadow sector consisting of a second chiral p-form and the second metric. A spacetime with two metrics has some interesting geometry and some of this is explored here and used in the construction of the interactions. The action has two diffeomorphism-like symmetries, one acting only on the physical sector and one acting only on the shadow sector, with the spacetime diffeomorphism symmetry arising as the diagonal subgroup.