



Contribution ID: 73

Type: **not specified**

## Black Hole Entropy From Multisymplectic Geometry

*Tuesday, 21 July 2015 15:00 (20 minutes)*

I will discuss multisymplectic geometry and its application to finite spacetime regions. This allows one to perform a 3+1 decomposition where the spatial slice need not be a Cauchy surface. I show how this can lead to a modification of the symplectic structure, Hamilton's principle function, and momentum maps (conserved charges). Such modifications are in the form of boundary terms which can arise from non-trivial boundary conditions at the edge of the spatial slice. I show how this can be applied to evolution in the presence of a black hole and how we can reproduce Wald's derivation of the first law of black hole thermodynamics using the modified conserved charges.

**Primary author:** KUR, Eugene (University of California, Berkeley)

**Presenter:** KUR, Eugene (University of California, Berkeley)

**Session Classification:** Student plenary session 2

**Track Classification:** Students