

Abstract Submitted
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Boundary Terms of Noether Currents for Gravity from Multisymplectic Geometry EUGENE KUR, University of California, Berkeley — Recent developments in multisymplectic geometry have clarified the connection between conserved Noether currents and symmetry transformations in field theories. In particular, the diffeomorphism invariance of the Einstein-Hilbert action has an associated collection of Noether currents, given by the Einstein tensor. We consider a space+time decomposition of the theory with the spatial slice having non-trivial boundary conditions. Using the multisymplectic formalism to simplify the transition to the space+time framework, we show how easy it is to obtain the “boundary terms” for the Noether currents. This is the first known incorporation of surfaces with non-trivial boundary conditions into this particular type of multisymplectic formalism. For asymptotically flat spacetimes, these boundary terms, in turn, have a clear, transparent, connection to the conserved quantities at spatial infinity, such as the ADM mass and ADM momentum.

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