
TOMAS LIKO, Pennsylvania State University

A unified treatment of asymptotically flat and anti-de Sitter spacetimes

The action for gravity with an asymptotic boundary must be renormalized; in the case of asymptotically flat spacetimes the action itself is infinite when evaluated for Minkowski spacetime, while for asymptotically anti-de Sitter spacetimes the boundary stress tensor on the conformal boundary is infinite. For these spacetimes, different prescriptions for generating infinite counter-terms are typically used in order to obtain finite quantities. A new prescription is discussed here which suggests that there exists a *generic counter-term* for which both the action on asymptotically flat spacetimes and the boundary stress tensor on asymptotically anti-de Sitter spacetimes are rendered finite. This counter-term arises from the first-order action on the configuration space consisting of the coframe and (Lorentz) connection; the corresponding boundary term is the natural one that appears from the requirement of functional differentiability. Extension to supergravity is also briefly discussed.