Contribution ID: **123** Type: **not specified**

A. Pombo: Virial identities in relativistic gravity

Monday 19 December 2022 17:30 (15 minutes)

Virial (a.k.a. scaling) identities are integral identities that are useful for a variety of purposes in non- linear field theories, including establishing no-go theorems for solitonic and black holes solutions as well as checking the accuracy of numerical solutions. In this presentation, we provide an algorithm for the derivation of such integral identities. We show that a complete treatment of virial identities in the relativistic gravity must take into account the appropriate boundary term. For General Relativity this is the Gibbons-Hawking-York boundary term. There is, however, a particular "gauge"choice i.e. a choice of coordinates and parametrizing the metric functions, that simplifies the computation of the virial identities in General Relativity, making both the Einstein-Hilbert action and the Gibbons-Hawking- York boundary term non-contributing. Under this choice, the virial identity results exclusively from the matter action. For generic "gauge"choices, however, this is not the case.

Session Classification: Session 4 B