SEMPARIS – Séminaires en région parisienne

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Seminar of the theory group of APC

Mardi 20 Mars 2018, 14 :00
APC, 483A - Malevitch
Domaines : hep-th

Titre : *Chern-Weil theorem, Lovelock Lagrangians in critical dimensions and boundary terms in gravity actions*

Orateur : **Nelson Merino (APC, Université Paris Diderot)**

Résumé : *We show how to translate into tensorial language the Chern-Weil theorem for the Lorentz symmetry, which equates the difference of the Euler densities of two manifolds to the exterior derivative of a transgression form. For doing so we need to introduce an auxiliary, hybrid, manifold whose geometry we construct explicitely. This allows us to find the vector density, constructed out of spacetime quantities only, whose divergence is the exterior derivative of the transgression form. As a consequence we can show how the Einstein-Hilbert, Gauss-Bonnet and, in general, the Euler scalar densities can be written as the divergences of genuine vector densities in the critical dimensions D=2,4, etc. As Lovelock gravity is a dimensional continuation of Euler densities, these results are of relevance for Gauss-Bonnet and, in general, Lovelock gravity. Indeed, these vectors which can be called generalized Katz vectors ensure, in particular, a well-posed Dirichlet variational principle.*