



Contribution ID: 37

Type: **not specified**

A geometric approach to moduli stabilization in a higher curvature braneworld

Thursday 15 October 2015 09:00 (45 minutes)

Higher curvature theories are subject of considerable interest in the study of gravitational theories beyond Einstein's gravity. Braneworld models in presence of higher curvature bulk lead to many interesting features starting from inflationary cosmology to collider phenomenology due to the presence of moduli fields. In this context, stabilization of the moduli in different higher dimensional models is a must for a proper resolution to the gauge hierarchy problem in elementary particle Physics. Such stabilization is normally achieved by introducing an external bulk field (known as stabilizing field) with ad hoc bulk and boundary potential. In this work we demonstrate that such a stabilization can be achieved by a purely geometrodynamical way originating from the higher curvature quantum corrections in the gravity sector.

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