



High Energy Physics - Theory

Random Geometry, Quantum Gravity and the Kähler Potential

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We propose a new method to define theories of random geometries, using an explicit and simple map between metrics and large hermitian matrices. We outline some of the many possible applications of the formalism. For example, a background-independent measure on the space of metrics can be easily constructed from first principles. Our framework suggests the relevance of a new gravitational effective action and we show that it occurs when coupling the massive scalar field to two-dimensional gravity. This yields new types of quantum gravity models generalizing the standard Liouville case.

Comments: 10 pages; v2: typos (including an exponent in eq. 13) corrected

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