

Quantum Effects in Gravity

The course will take place on Tuesdays and Thursdays from 10 to 12, starting on April 29th and ending on June 26th. For further information, send an email to either Sebastián Franchino-Viñas (sebastian.franchino-vinas@edu.unige.it) or Vincenzo Vitagliano (vincenzo.vitagliano@unige.it).

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Syllabus:

Canonical quantization and particle production
Driven harmonic oscillator
From harmonic oscillator to fields
Quantum fields in an expanding universe
Quantum fields in the de Sitter universe
Unruh effect
Hawking effect
Casimir effect
Path integral and vacuum polarization
Effective action formalism
Calculation of heat kernels
Renormalization of the effective action
Conformal anomaly