



International Centre for Theoretical Physics  
South American Institute for Fundamental Research

**Campus of IFT-UNESP - São Paulo, Brasil**

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**IFT-UNESP, São Paulo - Brazil**

# **MINICOURSE ON QUANTUM GRAVITY FROM THE QFT PERSPECTIVE**



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A short introductory and review course on perturbative Quantum Gravity. The first part is about the semiclassical approach, and includes renormalization, trace anomaly and some applications to cosmology. In the second part we describe the Lagrangian quantization of gravity and sketch the standard demonstration of the invariant renormalizability of the theory. The analysis of power counting shows that there are possibilities for non-renormalizable, renormalizable and superrenormalizable models of Quantum Gravity, but in the last two cases there is a problem of unphysical massive ghosts, unitarity of quantum theory and instability. Possible solutions of the problem of ghosts are discussed, including those related to the effective approach to Quantum Field Theory (QFT). Alternative possibilities include various versions of induced gravity, including string theory and treating Quantum Gravity as effective QFT at low energies.

There is no registration fee.

**Application deadline: February 24, 2019**

**Online application and more information:**  
**<http://www.ictp-saifr.org/QFT2019>**



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