

# Higher-derivative quantum field theories, unitarity and quantum gravity - Lecture 1

*Thursday, October 14, 2021 10:00 AM (2 hours)*

These lectures aim to clarify several aspects of higher-derivative quantum field theories, their issues and how to circumvent them. A special attention will be given to quantum gravity. After reviewing general definitions we discuss the role of higher derivatives in both effective field theories and fundamental ones. Focusing on the latter, we explore the class of theories suitable for quantum gravity, discuss their features and the issues with unitarity. Finally, we show how to reconcile renormalizability and unitarity by means of purely virtual quanta.

**Presenter:** PIVA, Marco (NICPB Tallinn)