The course outline:

Quantum Field Theory in Curved Spacetime,

Spring 2023.

This is an introductory course on quantum field theory in curved spacetime. It is a vast subject dealing with topics such as quantum field theory in an expanding Universe, Hawking radiation, Casimir effects, the cosmological constant problem, gravitational vacuum polarizations etc. Because of the technical nature of this subject, and also because some of its topics are still active areas of research, this subject can be studied and taught based on different perspecives. Correspondingly there are a number of technical books/monographs each covering various aspects of this subject in some details.

In this course we will mainly follow the book by Mukhanov-Winitzki:

Introduction to Quantum Effects in Gravity, Cambridge University Press, 2010.

This is a good introductory book with the emphasis on quantum field theory in cosmological backgrounds, Hawking radiation, Effective action etc. We shall follow this book closely, but we may review a few other topics such as the cosmological constant problem as well.

Time and place of the course:

Sunday and Tuesday, 9:00 - 10:30, IPM, School of Astronomy, Larak garden.

My Contact information

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