



Quantum Universe Lectures

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“Charting the Universe: the next generation of cosmological surveys”

5, 19 and 26 November 2021 at 14.30h

Zoom:

<https://uni-hamburg.zoom.us/j/92293543262>

(Meeting ID: 922 9354 3262, Passcode: 97540703)

Abstract:

The standard model of cosmology (the so-called Λ CDM model) is spectacularly successful. It is able to reproduce a large range of cosmological observations with just six free parameters. However, the model offers no physical "explanation" for several of these parameters. In particular, the physical nature of both dark matter and dark energy remains unclear even decades after their discoveries. Furthermore, the model may be beginning to crack, with different ways of measuring the Hubble constant returning irreconcilable results.

So far, no physical experiment or astronomical observation has been able to detect any effect of dark matter or dark energy on scales smaller than that of a galaxy. The effect of dark energy, in particular, is so far only evident on cosmological scales. It is therefore not surprising that large-scale surveys of the Universe are an important part of the observational toolkit used to study these phenomena.

Just like every other physics experiment, our ability to conduct such surveys is tightly coupled to the developments in a number of technological fields. As a result, the landscape of survey facilities is evolving rapidly. In this mini-series of lectures I will provide an overview of a selection of the latest generation of survey experiments, and a preview of what progress we expect from these.

Registration on Geventis:

<https://www.geventis.uni-hamburg.de/course?course=-4289412317204090300>
