



LECTURE COURSE IN THE QUANTUM UNIVERSE RESEARCH SCHOOL

Summer Term 2021

Theoretical Astroparticle Physics and Cosmology

Günter Sigl

Course Description:

This lecture will provide an introduction to the basics of high energy astro- and astroparticle physics and cosmology and their theoretical foundations.

The following topics will be covered:

- High Energy Cosmic and Gamma-Rays: Origin and Detection
- Shock Acceleration of High Energy Particles
- Neutrino Astrophysics
- Dark Matter
- Expansion of the Universe
- Thermal Processes in the Early Universe
- Nucleosynthesis
- Matter/Anti-Matter Asymmetry
- Density Perturbations & Cosmic Microwave Background (CMB)
- Inflation

Prerequisites:

bachelor level knowledge of theoretical physics (classical field theory, basic quantum mechanics and thermodynamics)

Date and Place: Mon 9:15–10:45, Thu 10:30–12:00, BigBlueButton
<https://bbb1.physnet.uni-hamburg.de/b/gun-kn9-hyk-heo>
<https://lernen.min.uni-hamburg.de/course/view.php?id=1165>

Starting on: 8 April 2021
