

# Preliminary plan for the lecture „Astrophysics“ in WS 2023/24

## „Classical“ astrophysics

- Topic 1: Introduction and overview
- Topic 2: Model zones and structures in the universe
- Topic 3: Radiation and transport
- Topic 4: Measurement of distances, masses, and velocities
- Topic 5: Cosmic rays
- Topic 6: Stellar structure equations
- Topic 7: Stellar energy sources
- Topic 8: Stars with different pressure sources
- Topic 9: Structure formation
- Topic 10: Birth of stars
- Topic 11: Scaling of main sequence stars
- Topic 12: Death scenarios
- Topic 13: Galaxies

7.5 weeks

2.5 weeks

- Topic 14: Newtonian Cosmology
- Topic 15: SRT

Topic 16 ART (*Introduction in 3 sessions*)

## „Crash course“

## „ART“ astrophysics and cosmology

- Topic 17: Outer Schwarzschild metric
- Topic 18: Rotation of perihelion
- Topic 19: Deflection of light
- Topic 20: Gravitational waves
- Topic 21: Inner Schwarzschild metric and star equilibria
- Topic 22: Time-dependent metric
- Topic 23: Gravitational collapse and Black Holes
- ? Topic 24: Homogeneous Cosmology (*Overview in 3 sessions*)
- Topic 25: Inflation (*Introduction in 2 sessions*)
- Topic 26: Inhomogeneous Cosmology (*Introduction in 2 sessions*)

5 weeks

