Course Description:
This lecture will provide an introduction to the basics of the theory of general relativity including applications such as black holes and cosmology.

The following topics will be covered:
• recapitulation of the theory of Special Relativity: four-vector formalism, accelerated observers,
• manifolds and curved spaces,
• basics of tensors and differential forms,
• gravitation and Einstein’s field equations,
• the Schwarzschild solution and Black Holes,
• cosmology: maximally symmetric spaces and the Friedmann–Robertson–Walker metric,
• gravitational waves.

Prerequisites:
Knowledge of theoretical physics on the level of a bachelor’s degree in physics is strongly recommended. Basic knowledge of special relativity.

Literature:
will be announced in the lecture

Date and Place: Wed, 10:15–11:45, Hörsaal III, Jungiusstr. 9
Fri, 10:15–11:45, Hörsaal III, Jungiusstr. 9

Problem Classes: Fri, 12:00–13:30, SR 1, Jungiusstr. 9
and Fri, 14:15–15:45, SR 1, Jungiusstr. 9
Starting on: 25 October 2019

Starting on: 16 October 2019