



Universität Hamburg

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CHAMPP

CENTER IN HAMBURG FOR
ASTRO-, MATHEMATICAL AND
PARTICLE PHYSICS

Summer Term 2022

Seminar on differential geometry: Black hole uniqueness theorems

Vicente Cortés

Seminar Description:

The seminar will focus on the study of vacuum solutions of Einstein's equations of gravity. These include the solutions found by Schwarzschild (1915) and Kerr (1963) which are interpreted as static and rotating black holes, respectively. We will see how these can be found systematically from suitable symmetry assumptions and boundary conditions.

The topics for the talks by the participants will be presented and distributed on the first session of the seminar.

Prerequisites:

Foundations of differential geometry will be assumed, including differentiable manifolds, submanifolds, Frobenius integrability, tensor fields, connections, curvature, pseudo-Riemannian metrics, Killing fields etc.

Literature (main source):

Markus Heusler: Black hole uniqueness theorems, Cambridge Lecture Notes in Physics.

Date and Place: Tuesday, 12:15 – 13:45, seminar room 431, Geomatikum
(Department of Mathematics, Bundesstrasse 55)

Starting on: April 5, 2022
