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E I N L A D U N G

im Rahmen des Literaturseminars

zum Vortrag

von

Jerzy Lewandowski
University of Warsaw

über

„Isolated horizons, the Petrov type D equation and the Near Horizon Geometry equation“

Abstract:

3-dimensional null surfaces that are Killing horizons to the second order are considered. They are embedded in 4-dimensional spacetimes that satisfy the vacuum Einstein equations with arbitrary cosmological constant. Internal geometry of 2-dimensional cross sections of the horizons consists of induced metric tensor and a rotation 1-form potential. It is subject to the type D equation. The equation is interesting from the both, mathematical and physical points of view. Mathematically it involves geometry, holomorphic structures and algebraic topology. Physically, the equation knows the secrete of black holes: the only axisymmetric solutions on topological sphere correspond to the the Kerr / Kerr-de Sitter / Kerr-anti-de-Sitter non-extremal black holes or to the near horizon limit of the extremal ones. In the case of bifurcated horizons the type D equation implies another spacial symmetry. In this way the axial symmetry may be ensured without the rigidity theorem. The type D equation does not allow rotating horizons of topology different then that of the sphere (or its quotient). That completes a new local no-herr theorem. The type D equation is also an integrability condition for the Near Horizon Geometry equation and leads to new results on the solution existence issue.

Zeit: Donnerstag, 04.10.2018, **14.00**
Ort: Arbeitsgruppe Gravitation, Währinger Straße 17,
Seminarraum A**, 2. Stock**

gez.: P. Chrusciel, M. Maliborski