Wintersemester 2015/16

Oberseminar
Geometrische Analysis und Mathematische Relativitätstheorie

Am Freitag, den 12.02.2016 spricht um **14 Uhr c. t.** im Raum N15,

Dr. Volker Schlue
(Universite Pierre et Marie Curie (Paris 6))

über das Thema

Non-existence of time-periodic vacuum space-times in general relativity

In contrast to Newton's theory of gravity, which allows for periodic motion, a self-gravitating system in general relativity is not expected to display dynamics which is periodic in time, due to the emission of gravitational waves. In this seminar, I will discuss a recent result obtained jointly with Spyros Alexakis, which shows that any time-periodic asymptotically flat vacuum space-time (arising from regular initial data) is stationary near infinity. Thus genuinely time-periodic gravitational fields do not exist, at least far away from the sources. The proof relies on uniqueness theorems for a class of ill-posed hyperbolic p.d.e.'s, which were developed jointly with Arick Shao, that highlight a relation between uniqueness properties of solutions to wave equations and the geometry of space-times with positive mass.

Hierzu wird herzlich eingeladen.

C. Cederbaum, G. Huisken, Chr. Nerz