

Workshop on Geometric Evolution Equations
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Geometric variational problems in General Relativity

Gerhard HUISKEN
Mathematisches Institut
Universität Tübingen
Auf der Morgenstelle 10
72076 Tübingen
GERMANY

`gerhard.huisken@uni-tuebingen.de`

Abstract

The Einstein equations governing gravitational phenomena in General Relativity can be derived from a variational principle for the Lorentzian metric of a curved space-time. It turns out that as a consequence physical concepts related to gravity such as energy, momentum and center of mass are also best formulated in terms of variational structures on Lorentzian manifolds. The lecture explains the interaction between new methods in analysis and differential geometry and physical concepts in the study of isolated gravitating systems.