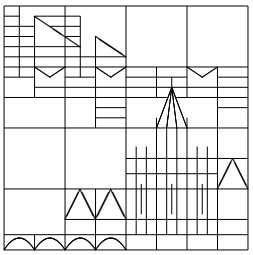
Universität Konstanz

Fachbereich
Mathematik und Statistik



Prof. Dr. Robert Denk

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Konstanz, den 14. Mai 2012

Im

Oberseminar Partielle Differentialgleichungen

wird am

Donnerstag, dem 14. Juni 2012

folgender Vortrag gehalten:

Prof. Dr. Claus Gerhardt (Universität Heidelberg):
"The quantization of gravity in globally hyperbolic spacetimes"

Zeit: 15:15 Uhr

Raum: F 426

Interessenten sind herzlich willkommen!

R. Denk, R. Racke, O. Schnürer

Abstract: We apply the ADM approach to obtain a Hamiltonian description of the Einstein-Hilbert action. In doing so we add four new ingredients: (i) We eliminate the diffeomorphism constraints. (ii) We replace the densities $\sqrt{g}$ by a function $\varphi(x, gij)$ with the help of a fixed metric χ such that the Lagrangian and hence the Hamiltonian are functions. (iii) We consider the Lagrangian to be defined in a fiber bundle with base space S_0 and fibers $F(x)$ which can be treated as Lorentzian manifolds equipped with the Wheeler-DeWitt metric. It turns out that the fibers are globally hyperbolic. (iv) The Hamiltonian operator H is a normally hyperbolic operator in the bundle acting only in the fibers and the Wheeler-DeWitt equation $Hu = 0$ is a hyperbolic equation in the bundle. Since the corresponding Cauchy problem can be solved for arbitrary smooth data with compact support, we then apply the standard techniques of QFT which can be naturally modified to work in the bundle.

(invited by Oliver Schnürer)