



Institut für
Angewandte Mathematik



Leibniz
Universität
Hannover

Institut für Angewandte Mathematik
02.12.2013

Oberseminar Analysis und Theoretische Physik

**Dr. Mauricio Godoy
Universität Göttingen**

“General H-type Lie groups”

Abstract:

In 1980, A. Kaplan introduced the so-called algebras of Heisenberg type. These algebras have the peculiarity that the adjoint endomorphism, with respect to a unit vector, maps isometrically the orthogonal complement of its kernel to the center. These algebras integrate to Lie group structures on $\{\mathbb{R}\}^n$ with very nice properties, which have played a fundamental role as a source of examples of well-behaved sub-Riemannian manifolds.

We modify Kaplan's construction to include the non-positive definite situation, relating it to the old problem of composition of quadratic forms. In this new framework, we are able to solve the geodesic equations for the sub-semi-Riemannian metric on nilpotent Lie groups of step two for the case of these "general" H-type groups. Additionally, considering these groups as semi-Riemannian manifolds, we can obtain information regarding some interesting curvatures of the group. If time permits, we will discuss some recent results in the problem of classification of the general H-type Lie algebras and existence of lattices in the corresponding H-type groups.

**Dienstag, 10.12.2013, 15:00 Uhr, Raum g005
Hauptgebäude der Universität**

Über Ihren Besuch würden sich freuen:

**Prof. Dr. Joachim Escher
Prof. Dr. Olaf Lechtenfeld
Prof. Dr. Elmar Schrohe
Prof. Dr. Christoph Walker**