

MATHEMATICS SEMINAR  
of the  
UNIVERSITY OF LUXEMBOURG  
in cooperation with the  
LUXEMBOURG MATHEMATICAL SOCIETY

**December 2009**

**1 December 2009, at 5 pm**

**Room B02**

C. Denson Hill  
Stony Brook University

**Einstein's Equations and Embedding of 3-dimensional CR Manifolds**

Abstract

We discuss several theorems concerning the connection between the local CR embeddability of 3-dimensional CR manifolds, and the existence of algebraically special solutions of Maxwell's and Einstein's equations, and related matters.

**8 December 2009, at 5 pm**

**Room B02**

Walter Freyn  
University of Münster

**Kac-Moody symmetric spaces: Foundations and some applications**

Abstract

Cartan introduced finite dimensional symmetric spaces as an important class of Riemann manifolds. Their geometry is governed by semisimple Lie groups. They are closely related to polar actions, buildings and isoparametric submanifolds.

In this talk we investigate the geometry and classification of Kac-Moody symmetric spaces. We explain, that Kac-Moody symmetric spaces are the natural generalization of symmetric spaces to infinite dimensions and sketch some connections to twin buildings, polar actions on Hilbert spaces and isoparametric submanifolds in Hilbert spaces.

**15 December 2009, ! at 4 pm !**

**Room B02**

Yves Le Jan  
University Paris-Sud (Orsay)

### **Markov loop measures**

#### Abstract

We explore some simple relations between Markovian path and loop measures, spanning trees, determinants, and Markov fields such as the free field.