

General Mathematics Seminar  
of the  
University of Luxembourg  
in cooperation with the  
Luxembourg Mathematical Society

February, 2012

Tuesday, February 7 , 2012, at 17:00

Campus Kirchberg, Room B02

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**Graded contact manifolds and principal Courant algebroids**

Abstract:

Contact structures will be interpreted as symplectic principal  $GL(1, R)$ -bundles. Gradings compatible with the  $GL(1, R)$ -action lead to the concept of a graded contact manifold, in particular, a linear contact structure. Linear contact structures will be proven to be exactly the canonical contact structures on first jets of line bundles. They give rise to linear Kirillov (or Jacobi) brackets and the concept of a principal Lie algebroid, a contact analog of a Lie algebroid. One can view Kirillov or Jacobi brackets as homological Hamiltonians on linear contact manifolds. Contact manifolds of degree 2, called principal Courant algebroids, will be presented as contact analogs of Courant algebroids.