

**SEMINAIRE DE MATHEMATIQUE  
DE  
L'UNIVERSITE DU LUXEMBOURG**

en collaboration avec la

**SOCIETE MATHEMATIQUE DU LUXEMBOURG**

**Programme du mois de novembre 2004**

Mardi 9/11 17h

Salle 3.04 b.s.

Monsieur Oleg K. SHEINMAN

Steklov-Institute and Independent University, Moscow, Russia

*Infinite-dimensional Lie algebras: further generalizations of Kac-Moody algebras, II*

In the first, same-named, part of the talk given on October, the 19th, we outlined the theories of Kac-Moody algebras and their representations and explained why in the case of Krichever-Novikov algebras a new approach is needed to develop corresponding theories.

The present talk is a continuation of the first one. We will remind the basic definitions concerning Krichever-Novikov algebras and give the construction of their fermionic representations closely related with the space of monodromy representations and the theory of the holomorphic vector bundles on Riemann surfaces.

Mardi 16/11 17h

Salle 3.04 b.s.

Monsieur Tom KRANTZ

Université du Luxembourg, Université Henri Poincaré Nancy 1

*Représentations somme d'holonomie*

Pour une variété Riemannienne le théorème de décomposition de De Rham dit que l'holonomie restreinte est un produit direct de groupes de Lie agissant de manière irréductible. Dans le cas général d'une variété munie d'une connexion la situation est plus compliquée comme le groupe d'holonomie n'a même plus de raison d'agir de manière complètement réductible. Nous explorons la structure de la variété si l'holonomie est tout de même "somme" c.-à-d. laisse invariant deux ou plusieurs sous-espaces supplémentaires. Nous expliciterons la cohomologie de Spencer ainsi que le critère de Berger dans diverses situations typiques.

Mardi 23/11 17h

Salle 3.04 b.s.

Monsieur Martin SCHLICHENMAIER

Université du Luxembourg

*Geometric Deformations of certain infinite dimensional Lie algebras*

Finite-dimensional Lie algebras have been the subject of extensive studies for quite a long time. Some basic results true in finite dimensions, will become false in infinite dimensions. In this talk I will give an example of this effect.

I will construct geometric families of infinite dimensional Lie algebras of vector fields and currents over the moduli space of complex one-dimensional tori with marked points. These algebras are algebras of Krichever-Novikov type and they consist of meromorphic objects over the tori.

As it will be shown the families will be non-trivial deformations of the (infinite dimensional) Witt algebra resp. of the classical current algebras. The result should be compared to the fact, that these algebras are formally rigid, i.e. on the formal level every deformation will be trivial. In finitely many dimensions formal rigidity implies rigidity. The construction shows that this is not true anymore in infinite dimensions.

Mardi 30/11 17h

Salle 3.04 b.s.

Monsieur Jean-Luc MARICHAL

Université du Luxembourg

*A Complete Description of Comparison Meaningful Functions*

Comparison meaningful functions acting on some real interval are completely described as transformed coordinate projections on minimal invariant subsets. The case of monotone comparison meaningful functions is further specified. Several already known results for comparison meaningful functions and invariant functions are obtained as consequences of our description.