



Σεμινάριο Γεωμετρίας

## Universal Lie infinity- algebroid of a Lie Rinehart algebra and application to symmetries of a foliation

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### Περίληψη

1) I will make a short introduction of my first paper co-written with C. Laurent-Gengoux. It shows that there is an equivalence of categories between Lie-Rinehart algebras over a commutative algebra  $O$  and homotopy equivalence classes of negatively graded Lie infinity-algebroids over their resolutions. This extends to a purely algebraic setting the construction of the universal  $Q$ -manifold of a locally real analytic singular foliation. In particular, it makes sense for the universal Lie infinity-algebroid of every singular foliation, without any additional assumption, and for Androulidakis-Zambon singular Lie algebroids. Also, to any ideal  $I \subset O$  preserved by the anchor map of a Lie-Rinehart algebra  $A$ , we associate a homotopy equivalence class of negatively graded Lie infinity-algebroids over complexes computing  $\text{Tor}^O(A, O/I)$ .

2) Also, I will talk about symmetries of singular foliations: Using the previous results we show that it is always possible to lift any symmetry action of a Lie algebra  $\mathfrak{g}$  on a singular foliation  $F$  to a Lie infinity-morphism from  $\mathfrak{g}$  to vector fields on a universal  $Q$ -manifold over  $F$ . Beyond of the existence and uniqueness of this morphism, there is an explicit formula in term of the vector field  $Q$  (not necessarily a universal one). We deduce from this general result several geometric consequences. We can also build examples of action of Lie algebra on sub-affine space which cannot be extended to the ambient space.

**Παρασκευή 28 Ιανουαρίου, 13:15 - 14:15**

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