

REPRESENTATIONS OF LIE ALGEBROIDS

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ABSTRACT. This talk will discuss Lie algebroids (i.e. geometric structures that unify Lie algebras, tangent bundles and foliations among others) and their representation theory, extending the usual theory for Lie algebras. A representation of a Lie algebroid on a vector bundle is an action by derivations of the space of smooth sections. Geometrically, this corresponds to vector bundles equipped with a flat connection compatible with the algebroid structure.

Unlike Lie algebras, the notion of adjoint representation of a Lie algebroid is not evident. However, based on results of Arias Abad- Crainic, we will observe that the adjoint representation of a Lie algebroid is well defined up to homotopy, yielding to the well known world of homotopy geometric structures.

If time permits, I will explain the relation between these structures and certain foliations on Lie algebroids arising from symplectic geometry. This is a joint work with Madeleine Jotz (École Polytechnique Fédérale de Lausanne, Switzerland).

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