Julius-Maximilians-
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MUΦX
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Announcement

Seminar on Deformation Quantization and Geometry

November 24th 2023 at 14:00 s.t.

Seminarroom SE 30

Francesco Cattafi (JMU Würzburg)

Multiplicative frame bundle of a Lie/VB groupoid

It is well known that the collection of linear frames of a smooth n-manifold M defines a principal $GL(n,\mathbb{R})$-bundle over M (called the frame bundle); more generally, this construction makes sense for any vector bundle over M. Conversely, any principal bundle together with a representation induces an associated vector bundle; these processes establish therefore a correspondence between vector bundles on one side, and principal bundles with representations on the other side.

If instead of a manifold M we begin with a Lie groupoid $\mathcal{G} \rightrightarrows M$, one can consider both the frame bundles of $\mathcal{G}$ and of M and try to "close" the resulting diagram in a natural way. The frame bundle of $\mathcal{G}$ is however too big to support a Lie groupoid structure over the frame bundle of M. In this talk, I will discuss how to fix this issue by introducing a special class of frames which interact nicely with the groupoid structure ("multiplicative frames"). At the end, I will sketch how to generalise this construction to a correspondence between VB-groupoids (groupoid objects in the category of vector bundles) and PB-groupoids (groupoid objects in the category of principal bundles). This is a joint work with Alfonso Garmendia.

Invited by Madeleine Jotz