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Announcement

# Seminar on Deformation Quantization and Geometry

**2. 5. 2025 at 14:00 c.t.**

Seminarroom SE 31

Kalin Krishna (Georg-August Universität Göttingen)

## Bisimplicial manifolds between higher Lie groupoids

Lie groupoids and higher Lie groupoids have gained a lot of interest among geometers in the recent decades because of their importance in differential geometry and higher gauge theory. We define these groupoids as a simplicial manifold satisfying certain Kan conditions. One would ideally need a nice framework (in the sense of an $\infty$-category) to organize these geometric groupoids. As per the Yoneda philosophy, it is as important to study these objects as studying the morphisms out of or into these objects. For these higher groupoids, we give a notion of 1-morphism as a generalization of HS bibundles. The data of this HS morphism can be captured by an augmented bisimplicial manifold satisfying a colored version of the Kan conditions. This is equivalent to a left Kan fibration to the interval. In this talk, we will build up this theory of higher groupoids and see how these bisimplicial manifolds can be seen as the right notion of morphisms. We will further see how this notion fits into a framework of an $(\infty, 1)$ category.

Invited by Madeleine Jotz