University of California, Riverside

Department of Mathematics

Colloquium

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"DG manifolds and Atiyah classes "

The notion of DG (differential graded) manifold, also known as NQ supermanifold, is a generalization of the notion of smooth manifold from ordinary geometry to higher geometry, specifically to DG geometry. A DG vector bundle is a vector bundle in the category of DG manifolds. In this talk, we review the original Atiyah class (and Todd class) of holomorphic vector bundles, that of DG vector bundles and that of DG manifolds introduced by Mehta, Stienon and Xu. We show some emerging connections between derived geometry and classical areas of mathematics such as complex geometry, foliation theory, Poisson geometry and Lie theory. We study, in particular, the Atiyah class and Todd class of the DG manifold $(F[1],d_F)$ coming from an integrable distribution $F \subset T_{\mathbb{K}} M = TM \otimes_{\mathbb{R}} \mathbb{K}$, where $\mathbb{K} = \mathbb{R}$ or $\mathbb{C}$. It develops a framework that encompasses both the original Atiyah class of holomorphic vector bundles and Molino class of real vector bundles foliated over a foliation as special cases. This is a joint work with MS Xiang and P Xu.

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Tea Time: 3:40 - 4:10 p.m.

Talk: 4:10—5:00 p.m.