Speaker: Damien Calaque

Title: The Ext algebra of a quantized cycle

Abstract: In the talk we will survey some results, obtained with Julien Grivaux, on the Lie-theoretic study of formal neighborhoods. We will start with a review of the general context, and of the Lie structures (Lie algebras, Lie algebroids) involved in the geometric study of formal neighborhood. We will then explain a Lie-theoretic interpretation of a geometric condition, discovered by Shilin Yu, that involves the second formal neighborhood of a smooth subvariety X in an ambient smooth algebraic variety Y. If this condition (called "tame") is satisfied, then the Ext algebra $\mathrm{RHom}_{\mathcal{O}_Y}(\mathcal{O}_X, \mathcal{O}_X)$ is isomorphic to the universal enveloping algebra of the shifted normal bundle $N_{X/Y}[-1]$ endowed with a specific Lie structure. This strengthens earlier results obtained with Caldararu and Tu. We also get a purely Lie-theoretic proof of Yufs result for the explicit calculation of the quantized cycle class in the tame case: it is the Duflo element of the Lie algebra object $N_{X/Y}[-1]$. I'll conclude the talk with a geometric analog of Duflo's conjecture for symmetric pairs.