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Seminar :Lander Hermans : Deforming prestacks, a calculus of rectangles

lundi 5 juin 2023 11:00 (1 heure)

In his foundational work Gerstenhaber furnishes the guiding example for algebraic deformation theory: for an associative algebra A he defined a dgLie bracket on its Hochschild complex and showed that it controls the deformations of A through the Maurer-Cartan equation. Algebraic geometry motivates the natural question whether a similar story exists for diagrams of associative algebras, e.g. when applied to the structure sheaf of a scheme. In this talk I will explain how the Gerstenhaber-Schack complex fulfils this role, yet also motivates to generalize from diagrams to prestacks (i.e. pseudofunctors) as the most suitable objects to start with. Inspired by the fact that the Lie-structure of the Hochschild complex arises from an underlying operadic calculus, we introduce a new L-infinity structure arising from a rectangular operadic calculus. We show it completes the story: the higher Lie brackets on the GS complex control the deformations of prestacks through the generalized MC equation. Along the way, we introduce a new type of operad, called "box operads", which can be seen as an enriched version of Leinster's fc-multicategories (also called virtual double categories). This is joint work with Hoang Dinh Van and Wendy Lowen.