Séminaire d'algèbre, topologie et géométrie
Jeudi 16 mai à 14h
Salle I

Kurusch Ebrahimi-Fard

Mulhouse

Spitzer-type identities in noncommutative Rota-Baxter algebras

Gian-Carlo Rota suggested in one of his last articles the problem of developing the notion of integration algebra, complementary to the already existing theory of differential algebras. As a starting point for such a theory, Rota proposed to consider a particular operator identity first introduced in 1960 by the mathematician Glen Baxter. Examples range from algebras with a direct decomposition into subalgebras to algebras of stochastic integrals. For arbitrary commutative Rota-Baxter algebras, proper exponential solutions of fixpoint equations are described by what is known as the classical Spitzer identity. The similar classical Bohnenblust-Spitzer identity involves the symmetric group and set-partitions. Recently, the seminal Cartier-Rota theory of classical Spitzer-type identities has been generalized to noncommutative Rota Baxter algebras. Pre-Lie algebras (also known as Vinberg or Gerstenhaber algebras) play a crucial role in this approach. In this talk we review recent work on Spitzer-type identities.
This talk is based on joint work with Frederic Patras (http://arxiv.org/abs/1304.1204) and Dominique Manchon (CNRS, Clermont-Ferrand, France).