## Noncommutative Poisson vertex algebras and Courant-Dorfman algebras

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## Abstract:

In 2015, to study integrable partial differential equations in noncommutative variables, De Sole, Kac and Valeri introduced double Poisson vertex algebras. They are noncommutative versions of the prominent Poisson vertex algebras, since they satisfy the Kontsevich-Rosenberg principle: a noncommutative algebro-geometric structure on an associative algebra has to induce the corresponding standard algebrogeometric structure on its representation varieties. On the other hand, Ekstrand and Zabzine, following works of Bressler, Roytenberg and Heluani, proved a bijective correspondence between Poisson vertex algebras and Courant-Dorfman algebras, as introduced by Roytenberg. Hence, it is natural to ask whether the double Poisson vertex algebras can be put in correspondence with suitable noncommutative generalizations of Courant-Dorfman algebras. The goal of this talk is to show that the answer is in the affirmative by introducing double Courant-Dorfman algebras. We also discuss the prototypical example of the standard exact double Courant-Dorfman algebra and how they satisfy the Kontsevich-Rosenberg principle. This is a joint work with Luis Álvarez-Cónsul (ICMAT) and Reimundo Heluani (IMPA).