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*Algebraic Structures over Derived Categories and Triangulated Categories*

Through the Ringel–Hall algebra approach, one can construct Kac–Moody Lie algebras and some elliptic Lie algebras from the derived categories of some finite dimensional associative algebras. In this talk, we start by recalling Peng–Xiao's work on the construction of Kac–Moody algebras from the derived categories of hereditary algebras, Lin–Peng's work on the construction of some elliptic algebras from the derived categories of some tubular algebras, and Toën's work on the construction of derived Hall algebras over differential graded category under some finiteness conditions. Then we discuss some generalizations of the above results and prove an analogue of Toën's formula which is used to define derived Hall algebras for odd-periodic triangulated categories. As an example, the Hall algebra over the 3-periodic orbit triangulated category of a hereditary abelian category will be described.

This talk is based on a joint work with F. Xu.