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## Meromorphic tensor categories and shifted r-matrices

*Friday 20 September 2024 10:30 (1 hour)*

I'll discuss recent work (with Wenjun Niu and Victor Py, to appear) on the representation theory of meromorphic tensor categories, a.k.a. chiral categories. From a physical perspective – our entry point – these are categories of line operators in 3d holomorphic-topological theories, such as twists of 3d  $N=2$  gauge theories. In the 3d  $N=2$  examples, one expects their cyclic homology to be related to quantum K-theory. As categories, they look roughly like coherent sheaves or matrix factorizations on loop spaces. I'll explain some physical ways to access the chiral tensor product in such categories, with examples. Then, following the Koszul-duality approach of Costello-Paquette, I'll explain how they may be represented as modules for what roughly looks like a homologically-shifted Yangian: an  $A$ -infinity bialgebra with a chiral coproduct, whose Maurer-Cartan element behaves like an  $r$ -matrix.

**Presenter:** DIMOFTE, Tudor (University of Edinburgh)