

# HALL ALGEBRAS OF DIRECTED CATEGORIES

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Hall algebras are decategorifications of quiver representations. For Dynkin quivers, one recovers the quantized universal enveloping algebra of the associated Kac-Moody Lie algebra via Hall algebras. We use this framework to obtain and compare multiple Hopf algebra structures on  $u_q(\mathfrak{sl}(\infty))$ . In particular the categorification of  $u_q(\mathfrak{sl}(\infty))$  allows us to produce quantum symmetries. This is joint work with Guillaume Pouchin and Adam-Christiaan van Roosmalen.