
Hopf25

Simon Lentner

University of Hamburg, Germany

Plenary talk, Forum E

Thursday, April 24, 2025

9h30-9h55

Proving the Logarithmic Kazhdan-Lusztig Correspondence

The logarithmic Kazhdan-Lusztig correspondence by B. Feigin and others is a conjectural equivalence between braided tensor categories of representations of quantum groups and of certain vertex algebras, which are algebras with an analytic flavour that appear in quantum field theory. I have previously reported on a proof that certain screening operators fulfill the relations of an associated Nichols algebra, and with T. Creutzig and M. Rupert we have proven the conjecture in small cases. In arXiv:2501.10735 I recently gave a proof in quite general situations, also including Nichols algebras beyond quantum groups, under the assumption that the vertex algebra side is analytically nice enough. The proof is almost completely algebraic, essentially it says: Every braided tensor category together with a big commutative algebra A , such that the category of local A -modules is semisimple and the category of A -modules contains no additional simple modules, is equivalent to representations of a quantum group associated to a Nichols algebra, which is determined by certain Ext^1 -groups. In a certain sense, this is a categorical and braided version of the Andruskiewitsch-Schneider program, and prominently uses important results in this area by I. Angiono and others.