

QUANTUM AUTOMORPHISM GROUPS OF CONNECTED LOCALLY FINITE GRAPHS

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Abstract:

By slightly adapting Banica's definition of the quantum automorphism group of a finite graph, it is not very difficult to associate to any connected locally finite graph a canonical multiplier Hopf- $*$ -algebra. The difficulty in showing that these also define algebraic quantum groups hence lies in showing the existence of invariant functionals. By using Mančinska and Roberson's graphical calculus with bi-labeled graphs, one may associate to any connected locally finite graph Π a unitary 2-category which will a posteriori be seen as the category of $\text{QAut}(\Pi)$ -equivariant $\ell^\infty(V(\Pi))$ bimodules. In Tannaka-Krein type fashion, one can then use this category to find the desired invariant functionals, and hence show the existence of $\text{QAut}(\Pi)$.