1167-16-122 **Ryan Kinser** and **Amrei Oswald*** (amrei-oswald@uiowa.edu). *Some quantum symmetries of path algebras.*

Much like group actions formalize the notion of symmetry, Hopf actions of quantum groups formalize the notion of quantum symmetry. We investigate an example of quantum symmetry by studying Hopf actions of $U_q(\mathfrak{b})$ and $U_q(\mathfrak{sl}_2)$ on path algebras. First, we parametrize these actions using linear algebraic data. Then, we attempt to describe the "building blocks" of these actions by viewing them as tensor algebras in the tensor categories $\mathsf{rep}(U_q(\mathfrak{b}))$ and $\mathsf{rep}(U_q(\mathfrak{sl}_2))$. We construct an equivalence between categories of bimodules in $\mathsf{rep}(U_q(\mathfrak{b}))$ (or $\mathsf{rep}(U_q(\mathfrak{sl}_2))$) and a subcategory of certain finite-dimensional representations of associative algebras, explicitly given in terms of quivers with relations. (Received March 01, 2021)