Hopf algebroids and twists for quantum projective spaces

The Ehresmann-Schauenburg (E-S) bialgebroid associated with a Hopf-Galois extension is the noncommutative analog of the gauge groupoid associated with a principal bundle. As for a Hopf algebra, a Hopf algebroid is a bialgebroid with an invertible antipode. In this talk, after recalling some basic notions about rings, coring, and bialgebroids, we first show how twists (a sub-group of characters) of a bialgebroid are related to antipodes in the general case. Eventually, after a short introduction to Hopf-Galois extensions, we characterize them for the E-S bialgebroid. Finally, we work out the example of a family of $O(U(1))$-extensions over quantum projective spaces. This talk is based on joint work with L. Dabrowski and G. Landi arXiv:2302.12073