

# A HOMOTOPY THEORY FOR QUANTUM PRINCIPAL BUNDLES

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Hopf Galois extensions are noncommutative analogues of principal fibre bundles with structural group replaced by a Hopf algebra. I'll discuss a concept of homotopy for Hopf Galois extensions and show how it allows a certain classification of such extensions. In particular, I'll show how the Hopf Galois extensions over a Drinfeld-Jimbo quantum enveloping algebra can be completely classified up to homotopy (the latter is joint work with Hans-Jürgen Schneider).

## **References:**

- C. Kassel, Quantum principal bundles up to homotopy equivalence, in *The Legacy of Niels Henrik Abel, The Abel Bicentennial*, Oslo, 2002, O. A. Laudal, R. Piene (eds.), Springer-Verlag 2004, 737–748.
- C. Kassel and H.-J. Schneider, Homotopy theory of Hopf Galois extensions, arXiv math.QA/0402034, to appear in *Ann. Inst. Fourier (Grenoble)* 55 (2005).