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# Hopf25

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Plenary talk, Forum E

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10h-10h25

## **Hopf-Galois extensions in noncommutative differential geometry**

The aim of noncommutative differential geometry is to extend differential geometry from commutative algebras to possibly noncommutative ones. In this framework, Hopf-Galois extensions play the role of principal bundles, where the Hopf algebra replaces the structure group and the subalgebra of coinvariants encodes the base algebra. The total space algebra turns out to be braided-commutative via the Đurđević braiding. We recall this construction of quantum principal bundle and outline how to endow the latter with differential structures in a compatible way. As a consequence, the noncommutative Atiyah sequence is exact and the total space differential calculus becomes a graded Hopf-Galois extension. We further provide examples on the quantum Hopf fibration and crossed product algebras. This talk is based on a collaboration with Del Donno, Latini and Sciandra, building on previous work of Đurđević, Brzeziński and Majid.