Codifferential Calculi and Quantum Homogeneous Spaces

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In this talk, we introduce the concept of codifferential calculus - a structure dual to differential calculus - that encapsulates the features of both classical and quantum differential geometry, and is motivated to serve as an abstract framework for both classical and quantum BGG sequences. We demonstrate that many foundational results from differential calculi extend naturally to this dual setting. For instance, in the case of equivariant codifferential calculi over quantum homogeneous spaces, Hermisson's classification of calculi in terms of quantum tangent spaces admits a direct dual formulation. Moreover, if the right coaction on the quantum tangent space is trivial, the corresponding codifferential calculus admits a description via a quadratic coalgebra. As a motivating example, we consider the Podleś sphere equipped with its standard noncommutative differential structure.