
# TWO QUANTUM DE RHAM SUPER COMPLEXES AND STRATIFICATION THEOREM

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**Time: Tue, May 20, 10:30-11:30am**
**Venue: Room 110, SCMS**

**Abstract:**

In order to study the "modular" representation theory of quantum gl(m|n) at root of unity, we introduce the quantum Manin supersapce and quantum (dual) Grassmann superalgebra with quantum divided power structure, and develop a kind of quantum differential calculus over them, and construct two kinds of quantum de Rham super complexes: one is of infinite length which is the quantized version of the classical analogue due to Manin-Deligne-Morgan in their early study of supermanifolds from gauge field theory, another is of finite length which has no classical analogue to our knowledge. For the latter, we prove the Poincare lemma for nontruncated complex, while for the truncated case, in order to calculate all the qauntum de Rham cohomologies we need to develop a specific technique to overcome the complicated difficulties encountered in the quantum supercase. I'll also talk about the "$\ell$-adic phenomenon" occurred in a kind of indecomposable modules in the root of unity case which originally were irreducible modules in the generic case. This talk is based on a series of our joint work with Dr. Ge Feng, and Prof. Marc Rosso.