Quantum Calculus and Quasiconformal Maps

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It is one of the goals of noncommutative geometry to translate basic notions of analysis, geometry and topology into the language of Banach algebras. We shall give several examples of such translation for classical spaces of functions on the circle, including Sobolev space of half-differentiable functions, BMO space and the space of quasisymmetric homeomorphisms. The arising operator calculus is called by Connes the quantum calculus.

In our talk we shall recall the Connes definition of quantization and present basic constructions of quantum calculus. Then we extend them to quasisymmetric homeomorphisms of the circle, i.e. homeomorphisms of the unit circle, preserving the orientation and extending to quasiconformal homeomorphisms of the unit disk.