ROBERTA ANNA ISEPPI, Centre for Quantum Geometry of Moduli spaces, Aarhus University
The Batalin-Vilkovisky construction: a noncommutative geometric approach

The *BRST cohomology complex*, discovered by Becchi, Rouet, Stora and Tyutin in 1975, plays a very important role in facing the problem of quantizing non-abelian gauge theories via the path integral approach. Indeed, this quantization procedure fails when applied to gauge theories, where the presence of local symmetries causes the degeneracy of the propagator. This problem is overcame by introducing extra (non-physical) fields, called *ghost-fields*, and defining the so-called BRST cohomology complex. It is precisely this cohomology complex that allows the recovery of important information on the theory, such as its set of observables or its renormalizability. Despite of its relevance in the context of quantum fields theory, this cohomology still deserves to be fully understood from a mathematical/geometrical point of view.

A very promising approach to reach this goal is to try to insert the BRST cohomology (constructed following the Batalin-Vilkovisky (BV) approach) in the framework given by *Noncommutative Geometry*. In this talk I will consider U(n)-gauge theories naturally induced by finite spectral triples and show how, by introducing the notion of *BV-spectral triple*, all the properties of the BV-extended theory, such as its bosonic/fermionic content, can have a (noncommutative) geometric interpretation.