



FMSP Lectures

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Introduction to BV quantization

October 13 (Tue), 14 (Wed), 15 (Thu), 16 (Fri)
15:00 ~ 17:30 Room 056

Abstract:

The lectures will focus on Batalin-Vilkovisky (BV) framework for gauge field theories. We will start with examples of gauge theories such Yang-Mills, BF-theory, Chern-Simons and others. The Hamiltonian structure for field theories will be explained on these examples. Then the classical BV-BFV (Batalin-Fradkin-Vilkovisky) setting will be introduced as a \mathbb{Z} -graded extension of the Hamiltonian structure of field theories. The AKSZ (Aleksandrov-Kontsevich-Swartz-Zaboronskij) construction of topological field theories will be introduced. We will construct corresponding BV-BFV theory and its extension to strata of all codimensions. We will also see that Chern-Simons theory, BF theory are of the AKSZ type. The geometry of BV theories is also known as derived geometry. The classical part will be followed by an outline of what is a quantum gauge theory and what is a path integral quantization of a classical gauge theory in the BV-BFV setting. Then we will discuss BV-integrals, fibered BV integrals and perturbative quantization.