



T.C. YEDİTEPE ÜNİVERSİTESİ

7^{TEPE} MATHEMATICS SEMINARS

Equivariant symplectic geometry of gauge fixing in Yang-Mills theory

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Abstract:

The Faddeev-Popov gauge fixing in Yang-Mills theory is interpreted as equivariant localization. It is shown that the Faddeev-Popov procedure amounts to a construction of a symplectic manifold with a Hamiltonian group action. The BRST cohomology is shown to be equivalent to the equivariant cohomology based on this symplectic manifold with Hamiltonian group action. The ghost operator is interpreted as a (pre)symplectic form and the gauge condition as the moment map corresponding to the Hamiltonian group action. This results in the identification of the gauge fixing action as a closed equivariant form, the sum of an equivariant symplectic form and a certain closed equivariant 4-form which ensures convergence. An almost complex structure compatible with the symplectic form is constructed. The equivariant localization principle is used to localize the path integrals onto the gauge slice.

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Time : 14:00

Place : Seminar Hall B 618, Mathematics Department¹

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