



Mathematical Physics

Dimension of the moduli space and Hamiltonian analysis of BF field theories

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By using the Atiyah-Singer theorem through some similarities with the instanton and the anti-instanton moduli spaces, the dimension of the moduli space for two and four-dimensional BF theories valued in different background manifolds and gauge groups scenarios is determined. Additionally, we develop Dirac's canonical analysis for a four-dimensional modified BF theory, which reproduces the topological YM theory. This framework will allow us to understand the local symmetries, the constraints, the extended Hamiltonian and the extended action of the theory.

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