



Mathematical Physics

A pure Dirac's canonical analysis for four-dimensional BF theories

[Alberto Escalante](#), [I. Rubalcava-García](#)

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We perform Dirac's canonical analysis for a four-dimensional BF and for a generalized four-dimensional BF theory depending on a connection valued in the Lie algebra of $SO(3,1)$. This analysis is developed by considering the corresponding complete set of variables that define these theories as dynamical, and we find out the relevant symmetries, the constraints, the extended Hamiltonian, the extended action, gauge transformations and the counting of physical degrees of freedom. The results obtained are compared with other approaches found in the literature.

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