

## **Analysis Of The New Generalized Actions Of The Einstein-Cartan Theory**

Inspiring by the Holst case, the Palatini (Palatini-Holst) action was generalized by adding term of real function depending on the Torsion which has no effects on the obtained evolution equations which are the classical vacuum Einstein equations (M. Dubois-Violette and M. Lagraa Lett. Math. Phys, 91 83, 2010). Through this poster, we shall expose an analysis of these new actions which shows the possibility to obtain the classical vacuum Einstein equations on space-time manifold allowing arbitrary no dynamical torsion when this additional function takes particular values (M. H. Lagraa and M. Lagraa, Classical and Quantum Gravity, Chapter 8, Nova Science Publisher 2011).

The second result presenting in this poster shows that we can construct the standard effective Einstein-Cartan action coupled to fermionic matter without the usual current-current term resulting from the nonvanishing torsion and depending on the real dimensionless Barbero-Immirzi Parameter. Hence, the establishment of equivalence between the Theory of General Relativity and the Einstein-Cartan theory minimally coupled to fermionic matter. (M. H. Lagraa and M. Lagraa, Class. Quant. Grav. 27, 095012, 2010).

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