

Searching for a fundamental equation for Quantum Gravity

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Based on my recent paper [1] I analyze what grounds we have to consider the Wheeler–DeWitt equation as a fundamental one. I discuss the arguments for the Wheeler–DeWitt equation, namely, the equation stems from the application of the Dirac quantization scheme to the theory of gravity, it must express gauge invariance and irrelevance of the notion of time in quantum gravity, etc. I shall show that taking into account features of the theory of gravity that distinguish it from other gauge theory enables one to argue for the alternative extended phase space approach to quantization of gravity in which the main role is given to the Schrödinger equation rather than the Wheeler–DeWitt one.

[1] T. P. Shestakova, "Is the WheelerDeWitt equation more fundamental than the Schrödinger equation?", *Int. J. Mod. Phys. D* **27** (2018) 1841004.