

## Schwarzschild-de-Sitter Solution in Quantum Gauge Theory of Gravity

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**Abstract:** We use the theory based on the gravitational gauge group  $G$  to obtain a spherical symmetric solution of the field equations for the gravitational potentials on a Minkowski space-time. The gauge group  $G$  is defined and then we introduce the gauge-covariant derivative  $D_\mu$ . The strength tensor of the gravitational gauge field is also obtained and a gauge-invariant Lagrangian including the cosmological constant is constructed. A model whose gravitational gauge potentials  $A_\mu^\alpha(x)$  have spherical symmetry, depending only on the radial coordinate  $r$  is considered and an analytical solution of these equations, which induces the Schwarzschild-de-Sitter metric on the gauge group space, is then determined. All the calculations have been performed by GR Tensor II computer algebra package, running on the Maple V platform, along with several routines that we have written for our model.

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Key words: gauge theory, gravitational field, spherical symmetry

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