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On the cosmological constant in the De Donder-Weyl Hamiltonian formulation of gauge gravity

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A modification of the Einstein-Hilbert theory, the Covariant Canonical Gauge Gravity (CCGG), leads to a cosmological constant that represents the energy of the space-time continuum when deformed from its (A)dS ground state to a flat geometry . CCGG is based on the canonical transformation theory in the De Donder-Weyl (DW) Hamiltonian formulation. That framework "deforms"the Einstein-Hilbert Lagrangian of the free gravitational field by a quadratic Riemann-Cartan concomitant. The theory predicts a total energy-momentum of the system of space-time and matter to vanish, in line with the conjecture of a "Zero-Energy-Universe" going back to Lorentz (1916) and Levi-Civita (1917). Consequently a flat geometry can only exist in presence of matter where the vacuum energy of matter is balanced by the vacuum energy of space-time. The observed cosmological constant is then just a a residual energy imbalance emerging from deviations from a flat geometry, torsion of space-time, and quantum gravity corrections. The constants of nature, Newton's G and Einstein's \Lambda, are mapped onto the coupling constants of CCGG.

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