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Cosmological Variation of Gravitation in a Quantum Theory of Mass-Spacetime DILLON SCOFIELD, Dept. Physics, Oklahoma State Univ — Quantum dynamical manifold theory (QDMT) is used to predict the single quasi-particle spin-1 boson manifold wave functions and the energy - excitation spectrum of a many-body mass-spacetime (MB-MST) assembly of such gravitrinos. This theory is used to calculate the small residual effective interaction between particles in the MB-MST after the full electroweak interaction is exactly removed. The interaction is mediated by the exchange of MST particle-hole excitations called xcitons that have a nominal energy of 5×10^{-8} MeV in the present epoch. The effective interaction, because of its magnitude, is identified with gravitation, giving a cosmological variation to Newton's gravitational parameter that is reported. The effective interaction leads to a superconducting, Bose- Einstein condensation (SC-BEC) at very high temperatures ($\sim 10^{17}$ GeV). Moreover, cosmologically, from the first instant of the Big Bang, it evolves from initially strongly repulsive values, transitions through a resonance, becomes strongly attractive, then enters a cosmological epoch of slowly increasing value, ultimately becoming repulsive. Calculations of the effect of the MB-MST on the rotation curves of galaxies give a consistent picture that the presence of the gravitrinos is responsible for the anomalous rotation and for much, if not all, the (dark) mass- energy in a universe.

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