Contribution ID: **51** Type: **Talk**

The Accelerating Universe in a Noncommutative Analytically Continued Foliated Quantum Gravity

Based on an analytically continued Riemannian foliated quantum gravity super-Hamiltonian, known as Branch Cut Quantum Gravity (BCQG) we propose a novel approach to investigating the effects of noncommutative geometry on a minisuperspace of variables, influencing the acceleration behavior of the universe's wave function and the cosmic scale factor. Noncommutativity is introduced through a deformation of the conventional Poisson algebra, enhanced with a symplectic metric. The resulting symplectic manifold provides a natural setting that enables an isomorphism between canonically conjugate dual vector spaces, spanning the BCQG cosmic scale factor and its complementary quantum counterpart. Using this formulation, we describe the dynamic evolution of the universe's wave function, the cosmic scale factor, and its complementary quantum image. Our results strongly suggest that the noncommutative algebra induces late-time accelerated growth of the wave function, the universe's scale factor, and its complementary quantum counterpart, offering a new perspective on explaining the accelerating cosmic expansion rate and the inflationary period. In contrast to the inflationary model, where inflation requires a remarkably fine-tuned set of initial conditions in a patch of the universe, analytically continued non-commutative foliated quantum gravity captures short and long scales, driving the evolutionary dynamics of the universe through a reconfiguration of the primordial cosmic content of matter and energy. This reconfiguration is encapsulated into a quantum field potential, which leads to the generation of relic gravitational waves, a topic for future investigation. Graphical representations and contour plots indicate a characteristic torsion (or twist) deformation of spacetime geometry. This result introduces new speculative elements
regarding the reconfiguration of matter and energy as a driver of spacetime torsion deformation, generating relic gravitational waves and serving as an alternative topological mechanism for the universe's acceleration. However, these assumptions require further investigation.

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