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*Ultraviolet Behavior in Background Independent Quantum Field Theory*

We describe a background independent quantization of the scalar field that provides an explicit realization of Fock-like states and associated operators in a polymer Hilbert space. The vacuum expectation values of the commutator and anticommutator of the creation and annihilation operators become energy dependent, and exhibit a surprising transition to fermionic behavior at high energy.

Furthermore, the approach yields a modified dispersion relation with a leading correction proportional to the momentum cubed. These results suggests a fundamental change in the ultraviolet properties of quantum fields.