

## Geometry, Matter and Physics (in person)

*Wednesday, December 1, 2021 12:00 PM (50 minutes)*

We show how the fundamental statistical properties of quantum fields combined with the superposition principle lead to continuous symmetries including the  $SL(2, C)$  group and the internal symmetry groups  $SU(2)$  and  $SU(3)$ . The exact colour symmetry is related to ternary  $Z_3$ -graded generalization of the fermionic commutation relations for quarks. A  $Z_3$ -graded generalization of the Dirac equation is presented, and its invariance properties are analyzed. They lead to an enlarged  $Z_3$ -graded Lorentz group, operating in the Hilbert space of quark states including flavors and generations.

**Presenter:** KERNER, Richard (LPTMC, Sorbonne-Université)