

Geometry, Matter and Physics (in person)

Wednesday, 1 December 2021 12:00 (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.

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