

# Signatures of inequivalent representations in path integrals

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A careful non perturbative study of flavor mixing reveals an interesting structure of the flavor vacuum. This is deeply related to the existence of unitarily inequivalent representations of field algebra in Quantum Field Theory. We have recently studied the possibility of a dynamical generation of fermion mixing by using one-loop effective action with the help of path-integral techniques. The analysis of this problem, which leads to gap-equations for the dynamical generation of masses and mixing, evokes two immediate questions: i) Does path integral know about inequivalent representations? ii) Is it the standard generating functional of Green's functions capable of distinguishing among different inequivalent vacua? I will show how to put forward some plausible replies to these questions.