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Gauge-covariant diagonalization of pion- a1 mixing and the resolution of a low energy theorem

We show how to fulfill the low energy theorem of current algebra relating the form factors associated with the neutral pion decay in two photons and the anomalous virtual photon decay in three pions. This has been a long standing puzzle in a class of chiral models involving the mixing of pion and axial-vector mesons. The key to the solution is a gauge covariant formulation of the mixing and the identification of surface terms that are fixed according to the pertinent Ward identities. This work will soon appear in the net and is based on [1,2].

[1] A.A. Osipov, B. Hiller, P.M. Zhang, Phys.Rev. D98 no.11, 113007 (2018) and Mod.Phys.Lett. A34 (2019) no.36, 1950301

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