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## Axion Quality from Superconformal Dynamics

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We discuss a possibility that a superconformal dynamics induces the emergence of a global  $U(1)_{PQ}$  symmetry to solve the strong CP problem through the axion. Fields spontaneously breaking the  $U(1)_{PQ}$  symmetry couple to new quarks charged under the ordinary color  $SU(3)_C$  and a new  $SU(N)$  gauge group. The theory flows into an IR fixed point where the  $U(1)_{PQ}$  breaking fields hold a large anomalous dimension leading to the suppression of  $U(1)_{PQ}$ -violating higher dimensional operators. The spontaneous breaking of the  $U(1)_{PQ}$  makes the new quarks massive. The  $U(1)_{PQ}$  symmetry is anomalous under the  $SU(3)_C$  but not under the  $SU(N)$  so that the axion couples to only the color  $SU(3)_C$  and the usual axion potential is generated. We also comment on a model that the  $U(1)_{PQ}$  breaking fields are realized as meson superfields in a new supersymmetric QCD.

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