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Corrections to hadron effective couplings due to weak background magnetic field

Tuesday 20 March 2018 16:00 (1 hour)

In this work corrections to the usual SU(2)-flavor Nambu-Jona-Lasinio (NJL) coupling [1] and also to the chiral pion couplings to constituent quarks [2] due to a weak external magnetic field are calculated at the one loop level. A sea quark determinant is expanded for relatively large quark mass and weak electromagnetic field and magnetic-field-dependent low energy quark effective coupling constants are resolved. Corrections to the NJL and vector NJL effective couplings and to well known pion-constituent quark couplings that break isospin and chiral symmetries emerge.

[1] F.L. Braghin, Phys. Rev. D 94, 074030 (2016); arXiv:1606.05587.
[2] F.L. Braghin, Eur. Phys. Journ. A 52, 134 (2016), arXiv:1601.04916.
F.L. Braghin, arXiv:1705.05926, submitted to publication.
F.L. Braghin, Phys. Rev. D 95, 014022 (2018).

Summary

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