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Baryon properties in large-N chiral perturbation theory

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Abstract content

Baryon properties are computed at one-loop order in heavy baryon chiral perturbation theory in the large-N limit, where N is the number of colors. Loop graphs with octet and decuplet intermediate states cancel to various orders in N as a consequence of the large-N spin-flavor symmetry of QCD baryons. These cancellations are explicitly shown for the general case of N_f flavors of light quarks. In particular, we discuss the baryon axial-vector couplings and magnetic moments. A comparison with the corresponding results obtained within conventional heavy baryon quiral perturbation theory is also performed. The agreement is remarkable.

Summary

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