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Pion Cloud Effects on Δ-N Mass Splitting from Quark Models

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Abstract: Pion cloud effects on Δ-N mass splitting are studied based on quark models. Pseudo-scalar pion-quark coupling is discussed in the relativistic and nonrelativistic frameworks. We separately calculate the pion cloud effects by the one-pion exchange potential and by another method which is consistent with the baryon chiral perturbation theory. Remarkable discrepancy in the mass splitting between the two methods is shown.

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Key words: quark models, coupling constants, pion cloud, Δ-N mass splitting

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