Effects of hyperfine interactions on masses of $N$ and $\Delta$ baryons

H Hassanabadi, S Zarrinkamar and A A Rajabi

Physics Department, Shahrood University of Technology, P.O.Box 3619995161-316 Shahrood, Iran
E-mail: h.hasanabadi@shahroodut.ac.ir

(Received 26 February 2008 ; in final form 20 February 2009)

Abstract
Presenting a model for theoretical study of baryon masses, either in relativistic or nonrelativistic area, has always been of great importance and several suggestions have been proposed. On the other hand, taking into account the effects of hyperfine interactions leads to interesting results. In the present work, we first introduce the hyperfine interaction and the quark potential corresponding to the isospin interaction. We then obtain the wavefunctions as well as the corresponding eigenvalues. The obtained results for the spectrum of baryons show a good agreement with experimental results.

Keywords: baryon, spin, isospin, Schrödinger equation, hyperfine interaction

For the full article refer to the Persian section