2003 Vol.40 No.3 pp.345-348 DOI:

Explicit Confinement Effect on the Helicity Amplitudes of the Low-Lying Nucleon Resonances

DONG Yu-Bing and HE Jun

Institute of High Energy Physics, The Chinese Academy of Sciences, P.O. Box 918, Beijing 100039, China
(Received: 2003-1-9; Revised:)

Abstract: Calculations of helicity amplitudes for the low-lying nucleon resonances are displayed based on a non-relativistic constituent quark model with a harmonic oscillator confinement. The explicit effect of quark confinement is shown. Our results show that the effect plays sizable role on some transition amplitudes of $S_{11}(1535)$ and $D_{13}(1520)$ resonances . The effect on the $\Delta(1232)$ transition amplitudes is less than 10%. However, the effect on the Roper resonance is remarkable but is inconclusive.

PACS: 12.39.Jh, 12.39.Ki, 12.39.Pn, 12.40.Yx, 14.20.-c, 13.40.Em
Key words: constituent quark model approach, confinement, resonance transition amplitudes

[Full text: PDF]

Close