Nuclear Theory

P_11 Resonance Extracted from pi-N Data and Its Stability

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We study the stability of resonance poles in pi-N P_{11} partial wave, particularly the Roper resonance, by varying parameters significantly within the EBAC dynamical coupled-channels model, keeping a good fit to the empirical amplitude. We find that two Roper poles are stable against the variation. However, for higher energies, the number of poles can change depending on how the parameters are fitted within error bars. We also developed a model with a bare nucleon which forms the physical nucleon by being dressed by the meson-cloud. We still find a good stability of the Roper poles.

Comments:	4 pages, 2 figures, one minor correction, Contribution to the proceedings of the 8th International Workshop on the Physics of Excited Nucleons (NSTAR2011), Newport News, VA, USA, May 17-20, 2011
Subjects:	**Nuclear Theory (nucl-th)**; High Energy Physics - Phenomenology (hep-ph); Nuclear Experiment (nucl-ex)
Cite as:	**arXiv:1106.3599** [nucl-th]
	(or **arXiv:1106.3599v2** [nucl-th] for this version)

Submission history

Which authors of this paper are endorsers?