

Abstract Submitted
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What is baryon spectroscopy and what should we do about it?

MICHAEL SADLER, Abilene Christian University — Existing determinations of the masses, widths and decay modes of low-lying excited states of the nucleon, as compiled in the Review of Particle Physics, are determined from energy-independent partial wave analyses of pion-nucleon scattering data. For the $N^*(1440)$ and most other resonances under 2 GeV, the analyses cited are the Karlsruhe-Helsinki, Carnegie Mellon-Berkeley and Kent State analyses, the latter of which used the elastic amplitudes from the other two. The data included in these analyses were published before 1980. Other analyses, notably the recent ones from George Washington University and the Pittsburgh-Argonne group, are “not used for averages, fits, limits, etc.” Complete sets of measurements (differential cross sections, analyzing powers and spin rotation parameters) have been measured in the $N^*(1440)$ resonance region since 1980, culminating in the Crystal Ball program at BNL to measure all-neutral final states (charge exchange, multiple π^0 final states, η production near threshold and inverse photoproduction). An overview of these data will be presented, the need for a revitalized partial wave analysis effort will be described, and plans for future experiments at ITEP in Moscow and J-PARC in Japan will be discussed.

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