

On the nature of the N^* and Δ resonances via coupled-channel dynamics

Monday, 16 October 2023 15:10 (20 minutes)

This talk focuses on a recent work aiming at determining the composition of certain N^* and Δ resonances, i.e. whether they are compact states formed directly by quarks and gluons, or hadronic molecules generated from the meson-baryon interaction. The information of the resonance poles is provided by a comprehensive coupled-channel approach, the Jülich-Bonn model. 13 states that are significant in this approach are studied. Two criteria for each state are adopted in this paper, the comparison thereof roughly indicates the model uncertainties. It is found that the conclusions for 8 resonances are relatively certain: $N(1535)_{\frac{1}{2}}^-$, $N(1440)_{\frac{1}{2}}^+$, $N(1710)_{\frac{1}{2}}^+$, and $N(1520)_{\frac{3}{2}}^-$ tend to be composite; whereas $N(1650)_{\frac{1}{2}}^-$, $N(1900)_{\frac{3}{2}}^+$, $N(1680)_{\frac{5}{2}}^+$, and $\Delta(1600)_{\frac{3}{2}}^+$ tend to be compact.

Parallel Session

Hadron Spectroscopy

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