

Low-lying baryon resonances from lattice QCD

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Recent results studying the masses and widths of low-lying baryon resonances in lattice QCD are presented. The s -wave scattering lengths with both total isospins $I = 1/2$ and $I = 3/2$ are inferred from the finite-volume spectrum below the inelastic threshold together with the $I = 3/2$ p -wave containing the $\Delta(1232)$ resonance. A lattice QCD computation employing a combined basis of three-quark and meson-baryon interpolating operators with definite momentum to determine the coupled channel $\Sigma\pi - N\bar{K}$ scattering amplitude in the $\Lambda(1405)$ region is also presented. Our results support the picture of a two-pole structure suggested by theoretical approaches based on $SU(3)$ chiral symmetry and unitarity.

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