

Abstract Submitted
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Phenomenology of spin 3/2 baryons with pentaquarks TETSUO HYODO, ATSUSHI HOSAKA, Research Center for Nuclear Physics — We examine several assignments of spin and parity for the pentaquark Θ^+ state ($J^P = 1/2^\pm, 3/2^\pm$) in connection with known baryon resonances. Assuming that the Θ^+ belongs to an antidecuplet representation which mixes with an octet, we calculate the mass spectra of the flavor partners of the Θ^+ based on the SU(3) symmetry. The decay widths of the Θ^+ and nucleon partners are analyzed for the consistency check of the mixing angle obtained from the masses. It is found that a suitable choice of the mixing angle successfully reproduces the observed masses of $\Theta(1540)$ and $\Xi_{3/2}(1860)$, when their spin and parity are assigned to be $J^P = 3/2^-$, together with other $J^P = 3/2^-$ resonances. The decay widths of $\Theta \rightarrow KN$, $N(1520) \rightarrow \pi N$, and $N(1700) \rightarrow \pi N$ are also reproduced simultaneously.

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