

High Energy Physics - Phenomenology

Prediction of new charmed and bottom exotic pentaquarks

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Baryons of the type $Qqqqq$ -bar (where $Q = c, b$ and $q = u, d, s$ quarks) forming anti-decapenta (15)-plets with spin-parity one half-plus are predicted on simple theoretical considerations. The lightest members of these multiplets are explicitly exotic doublets $cuuds$ -bar, $cudds$ -bar with mass about 2420 MeV, and $buuds$ -bar, $budds$ -bar with mass about 5750 MeV, only 130 MeV heavier than Λ_c and Λ_b , respectively, and thus stable against strong decays. Although the production rate is probably very low, these remarkable pentaquarks can be looked for at LHC, Fermilab, B-factories, RHIC and elsewhere: their signatures are briefly discussed.

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