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Production and decay of Θ^+

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In the first part we study the fall-apart decay of Θ^+ within a non-relativistic quark model. Assuming J^P of Θ^+ are $1/2^{\pm}$, matrix elements and decay rates are computed in such way that the role of the overlap functions $\langle KN|\Theta^+\rangle$ for spin, flavor, color and orbital wave functions can be studied. We find that for $1/2^-$ of $(0s)^5$, the width is too large to be identified with a narrow resonance, while it is about a several tens MeV for $1/2^+$. By assuming strong diquark correlations, the width is reduced to be of order 10 MeV. It is then pointed out that within a quark model, strong suppression can occur if $J^P = 3/2^-$. Based on these observations, we study more on the possibility $J^P = 3/2^-$. We take a brief look at an analysis based on flavor SU(3), where we see that the present data seems to favor the $3/2^-$ quantum numbers. Then we reconsider photo-productions of Θ^+ from the proton and neutron again but this time for $J = 3/2$. It is found that there is a large asymmetry between the production rates of the two targets; production from the proton is very much suppressed as compared with that from the neutron. The resulting cross section is only a few nb, which does not contradict the new CLAS result.