Contribution ID : **13** Type : **poster**

The role of an h_1 state in the $J/\psi \to \eta K^{\star 0}\bar{K}^{\star 0}$ decay

Saturday, 4 June 2016 16:00 (1:30)

Collaboration

Abstract content

The BES data on the $J/\psi \to \eta K^{\star 0}\bar{K}^{\star 0}$ reaction show a clear enhancement in the $K^{\star 0}\bar{K}^{\star 0}$ mass distribution close to the threshold of this channel. Such an enhancement is usually a signature of a L=0 resonance around threshold, which in this case would correspond to an h_1 state with quantum numbers $I^G(J^{PC}) = 0^-(1^{+-})$. A state around 1800 MeV results from the interaction of the $K^\star\bar{K}^\star$ using the local hidden gauge approach. We show that the peak observed in $J/\psi \to \eta K^{\star 0}\bar{K}^{\star 0}$ naturally comes from the creation of this h_1 state with mass and width around 1830 MeV and 110 MeV, respectively. A second analysis, model independent, corroborates the first result, confirming the relationship of the enhancement in the invariant mass spectrum with the h_1 resonance.

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Session Classification : Poster Session