

Reply to “Comment on ‘The evidence for a pentaquark signal and kinematic reflections’”

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The quantitative aspects of the model used, together with kinematic reflections to explain the K^+n spectrum in K^+K^- photoproduction on deuterium, were recently criticized. Here we respond to these criticisms.

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Hicks *et al.* [1] are correct that π exchange cannot account for neutral $a_2(1320)$ or $f_2(1275)$ photoproduction but the result of our paper [2] is not sensitive to the details of their production. The CLAS K^+K^- mass spectrum shows an enhancement in the mass region around $1.3 \text{ GeV}/c^2$ and the presence of these higher spin resonances, along with their interference, can lead to an enhancement in the K^+n mass spectrum in the vicinity of $1.5 \text{ GeV}/c^2$. Statistical fluctuations can then lead to the appearance of a narrow peak at the mass of the purported pentaquark—as Hicks *et al.* concede. We estimate the

probability of such a fluctuation to be of order 10%–15%. The original CLAS paper [3] did not consider such contributions to the background and overestimated the statistical significance of their signal.

If we keep the same number of events in the 2σ region around the central value of the pentaquark mass, which as seen in Fig. 3 of Ref. [2] is clearly an overestimation, we would obtain a 2.5σ signal. CLAS reports a 5.8σ signal instead. We also refer the reader to [4] which reviews the significance of other positive signals of a pentaquark along with recent null results of searches for pentaquarks.

[1] K. Hicks, V. Burkert, A. E. Kudryavtsev, I. I. Strakovsky, and S. Stepanyan, preceding Comment, Phys. Rev. D **71**, 098501 (2005).

[2] A. R. Dzierba, D. Krop, M. Swat, S. Teige, and A. P. Szczepaniak, Phys. Rev. D **69**, 051901 (2004).

[3] S. Stepanyan *et al.* (CLAS Collaboration), Phys. Rev. Lett. **91**, 252001 (2003).

[4] A. R. Dzierba, C. A. Meyer, and A. P. Szczepaniak, hep-ex/0412077.