

Study of $D^+ \rightarrow K_S^0 K^{*}(892)^+ \pi^+$ in $D^+ \rightarrow K_S^0 K_S^0 \pi^+$

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By analyzing the e^+e^- collision data sample with an integrated luminosity of 8.0 fb^{-1} collected with the BESIII detector at the center-of-mass energy of 3.773 GeV, we perform an amplitude analysis of $D^+ \rightarrow K_S^0 K_S^0 \pi^+$ for the first time. Our amplitude model contains intermediate decays $D^+ \rightarrow K_S^0 K^{*}(892)^+$ and $D^+ \rightarrow K_S^0 (K_S^0 \pi^+)_{s\text{-wave}}$. The dominant intermediate process is $D^+ \rightarrow K_S^0 K^{*}(892)^+$, with a fit fraction of $(97.8 \pm 1.0_{\text{stat.}} \pm 0.4_{\text{syst.}})\%$, where the first uncertainty is statistical and the second uncertainty is systematic. In addition, with the detection efficiency obtained from the updated generic MC samples generated based on the amplitude analysis results, we obtain the absolute branching fraction of $\mathcal{B}(D^+ \rightarrow K_S^0 K_S^0 \pi^+) = (2.97 \pm 0.09_{\text{stat.}} \pm 0.05_{\text{syst.}}) \times 10^{-3}$. Using the branching fraction we measured, we obtain the branching fraction $\mathcal{B}(D^+ \rightarrow K_S^0 K^{*}(892)^+) = (8.72 \pm 0.28_{\text{stat.}} \pm 0.15_{\text{syst.}}) \times 10^{-3}$.

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