EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH (CERN)

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Quantum numbers of the $X(3872)$ state and orbital angular momentum in its $\rho^0 J/\psi$ decay

The LHCb collaboration

SUPPLEMENTAL PLOTS APPROVED FOR PUBLIC PRESENTATIONS

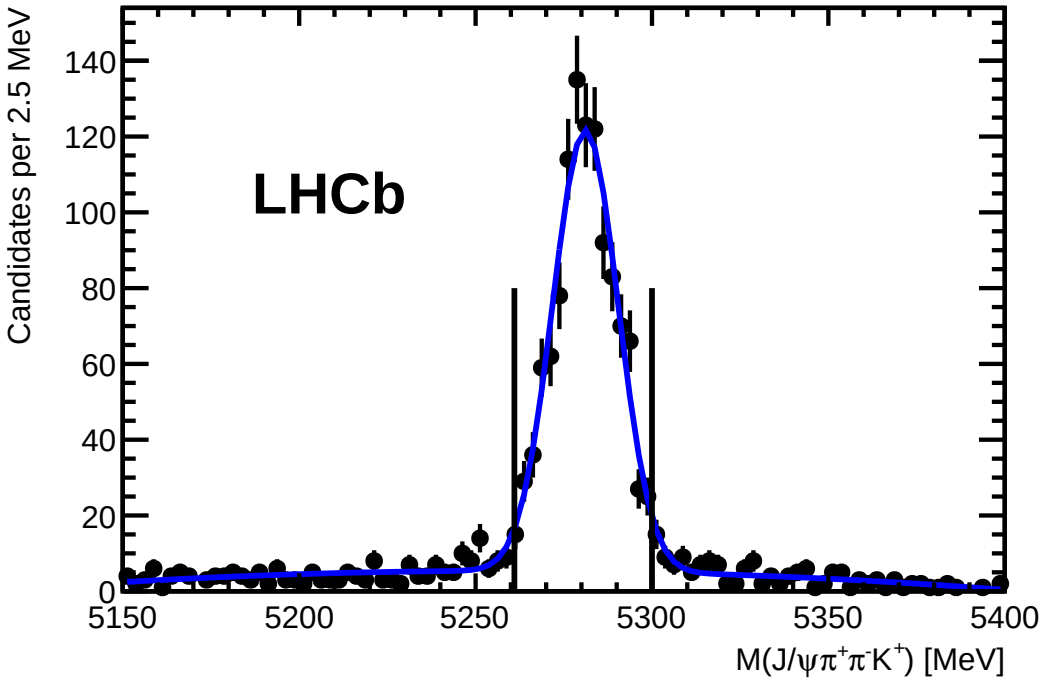

Figure 1: Distribution of $M(J/\psi\pi^+\pi^-K^+)$ for $B^+ \to X(3872)K^+$, $X(3872) \to \pi^+\pi^- J/\psi$ candidates with the $M(J/\psi\pi^+\pi^-)$ mass within $\pm 2.5\sigma_M$ of the $X(3872)$ mass peak (points with error bars). The vertical bars illustrate the range used in the angular analysis. The fit of B^+ signal over a smooth background is also shown (blue solid line).

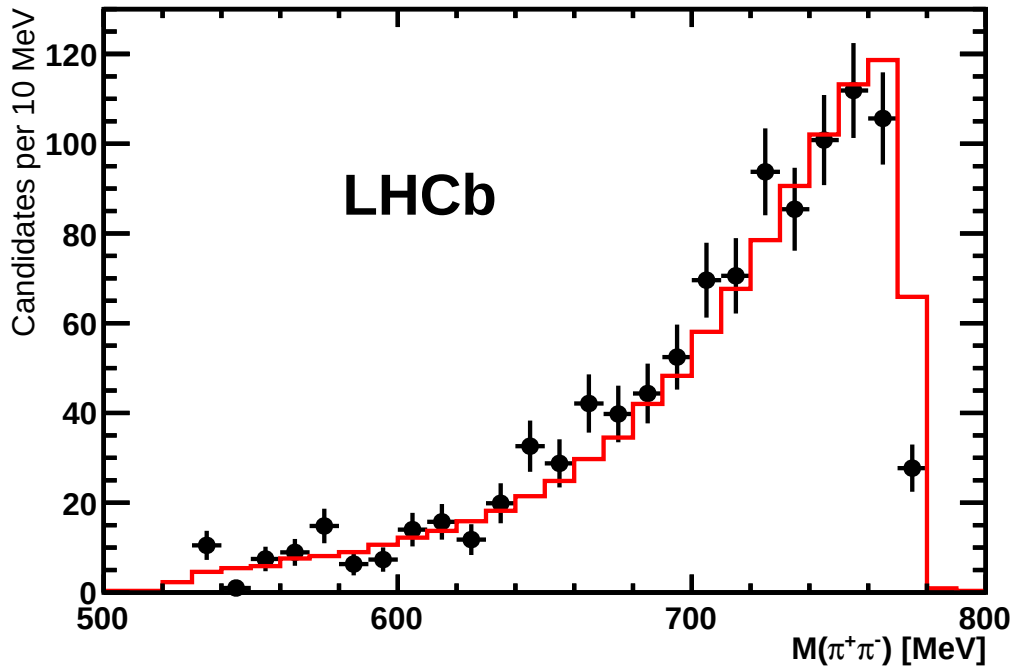

Figure 2: Background-subtracted distribution of $M(\pi^+\pi^-)$ for $B^+ \to X(3872)K^+$, $X(3872) \to \pi^+\pi^- J/\psi$ candidates for the data (points with error bars) and for the $X(3872) \to \rho(770)J/\psi$, $\rho(770) \to \pi^+\pi^-$ simulation (histogram).

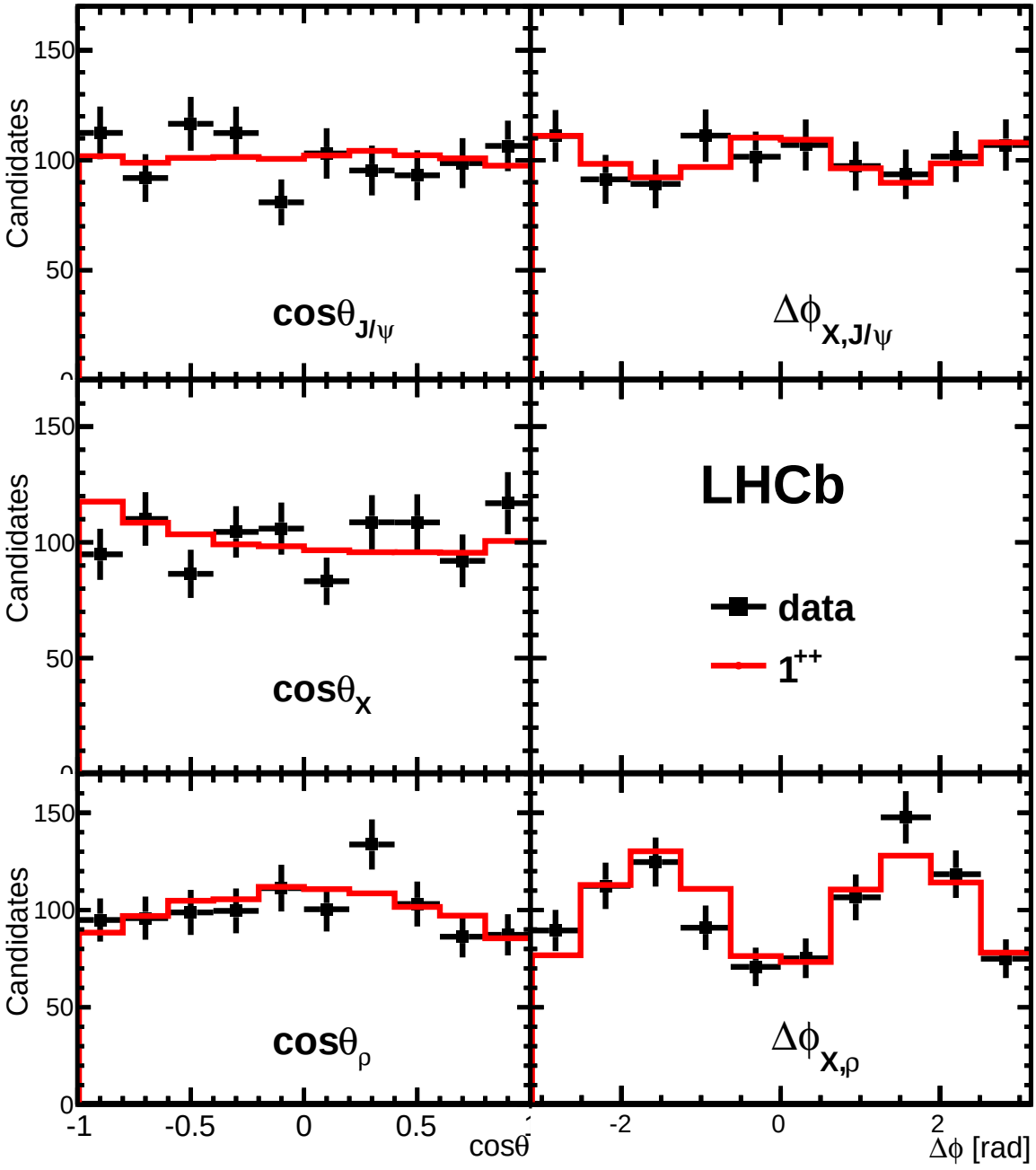

Figure 3: Background-subtracted distribution of all angles for the data (points with error bars) and for the 1^{++} fit projections (histograms).

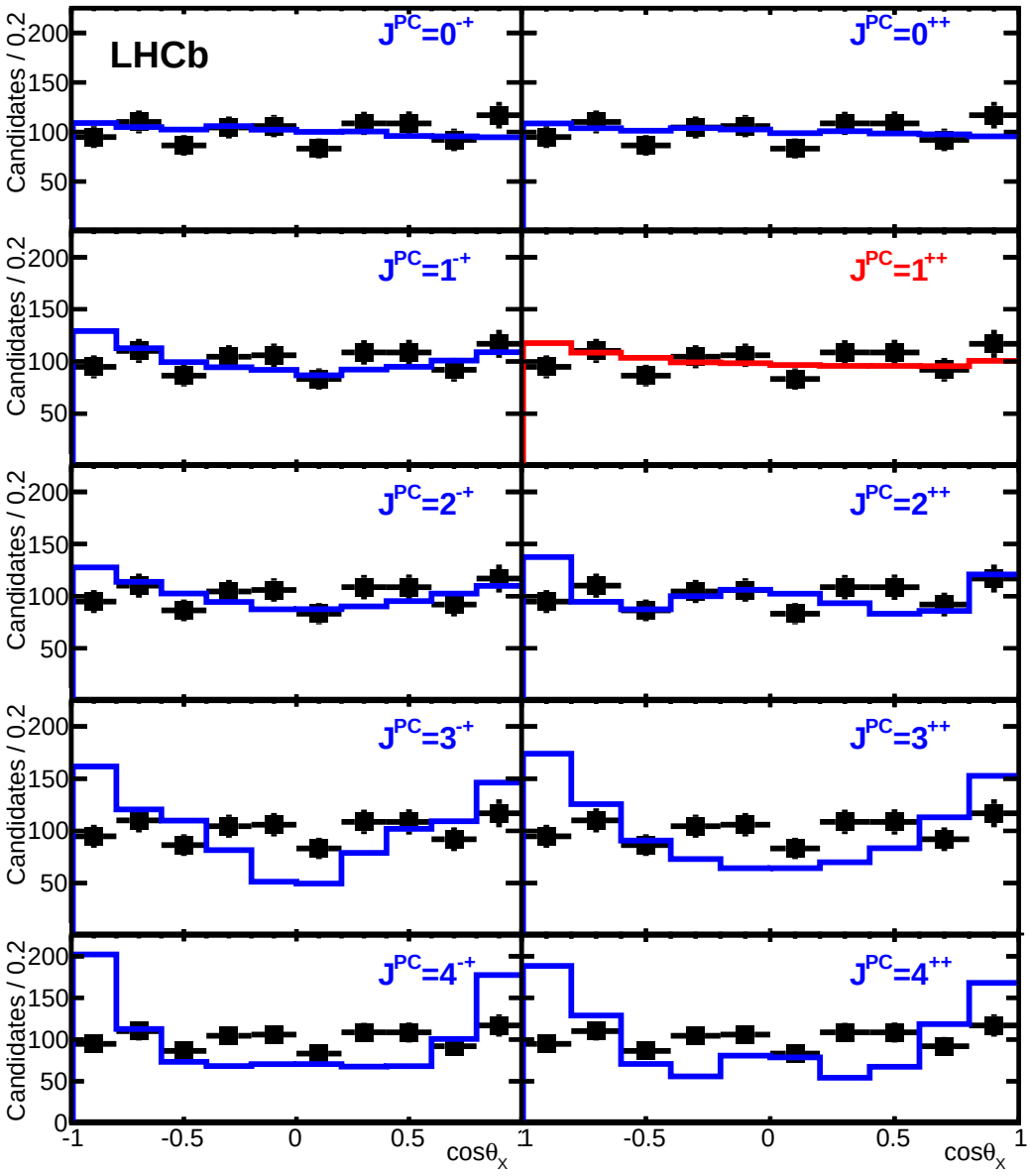

Figure 4: Background-subtracted distribution of $\cos\theta_X$ for all signal candidates for the data (points with error bars) compared to the expected distributions for various $X(3872)$ J^{PC} assignments (solid histograms) with the B_{LS} amplitudes obtained by the fit to the data in the five-dimensional angular space. Compare to Fig. 4 in the paper.