

Feasibility study of searches for transitions between X(3872) and charged Z states with the PANDA experiment at FAIR

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Following the discovery of the X(3872), several exotic states, collectively known as XYZ states, have recently been identified in the energy region of charmonium. Searches with proton-antiproton collisions, such as the upcoming PANDA experiment at FAIR, will play an essential role in the effort to shed light on the nature of these states, since the direct production mechanisms and high rates enable studies of processes and decay modes which are inaccessible at e^+e^- facilities. Although transitions between X and Y states, and Y and Z states, were observed at the BESIII experiment, transitions between X and Z states have as of today not yet been observed. Furthermore, the observation of charged Z states near the DD^* and D^*D^+ threshold suggests the existence of similar states near the $\bar{D}D$ threshold. This contribution will report on the first preliminary results of a feasibility study of a search for transitions between the X(3872) and a charged Z(3730), in the decay channel where $X(3872) \rightarrow Z(3730)^\pm \pi^\mp$, $Z(3730)^\pm \rightarrow \chi_{c1} \pi^\pm$, $\chi_{c1} \rightarrow J/\psi \gamma$ and $J/\psi \rightarrow$ leptons, using a Monte Carlo simulation of the PANDA detector with the PandaRoot software framework

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