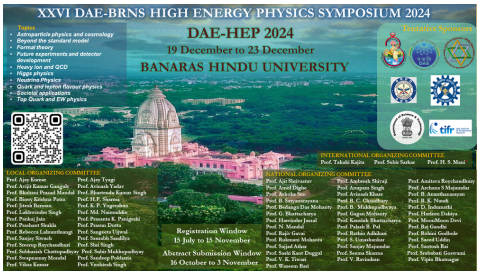

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Study of X(3872)-> J/psi gamma and search for X(3872)->psi(2S) gamma using the Belle and the Belle II Experiments

The resonance state $X(3872)$, also known as $\chi_{c1}(3872)$ was discovered by the Belle collaboration in 2003 in the decay $B^+ \to X(3872)K^+$ where $X(3872) \to J/\psi\pi^+\pi^-$. A lot of theoretical as well as experimental studies have been carried out on this state, but its nature is still not well known. Currently, X(3872) is a strong contender for tetraquark, $\bar{D}^0 D^{*0}$ molecule, $\chi_{c1}(2P)$ state, admixture of $c\bar{c}$ and $\bar{D}^0 D^{*0}$ molecule state. Radiative decays of X(3872) can provide insights into the structure of the state. Recently LHCb has measured $R_{\psi\gamma}$ which is the ratio of B.F. of $X(3872) \to \psi(2S)\gamma$ to $X(3872) \to J/\psi\gamma$ and supported Belle measurement over BaBar. However, there is still some conflict between LHCb and BESIII results. Belle and Belle II combined study can help in solving this conflict. We plan to present a preliminary Monte Carlo (MC) study of signal and background for these decay modes.

Field of contribution

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