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Excitation of $d^*(2380)$ dibaryon in the coherent $pd \to pd\pi\pi$ channel at ANKE

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Collaboration

ANKE

Abstract content

The reaction $p + d \to p + d + X$ was studied at 0.8–2.0 GeV proton beam energies with the ANKE magnetic spectrometer at the COSY synchrotron storage ring. The proton-deuteron pairs emerging with high momenta, 0.6–1.8 GeV/c, were detected at small angles with respect to the proton beam. Distribution above the reaction missing mass M_x reveals a local enhancement near the threshold of the pion pair production specific to the so-called ABC effect. The enhancement has a structure of a narrow bump placed above a smooth continuum. The invariant mass of the $d\pi\pi$ system in this enhancement region exhibits a resonance-like peak at $M_{d\pi\pi} \approx 2.36$ GeV/c^2 with the width $\Gamma \approx 0.10$ GeV/c^2, corresponding to the excitation of the $d^*(2380)$ dibaryon resonance. A possible interpretation of these features is discussed.

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