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## Study of Coherent $\pi^0$ -Photoproduction on the Deuteron

In the present paper, we consider the coherent neutral-pion photoproduction reaction on the deuteron in the energy region from pion-threshold up to 1 GeV using an enhanced elementary pion photoproduction operator on the free nucleon and a realistic high-precision nucleon-nucleon potential model for the deuteron wave function. Numerical results for total and differential cross sections are presented for which the sensitivity to various models for the elementary pion photoproduction amplitude is investigated. Considerable dependence of the results on the elementary amplitude is found at photon lab-energies close to threshold and above 600 MeV. In addition, the results of differential and total cross sections are compared with the available experimental data and a good agreement was found.

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