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ϕ -meson photoproduction on the nucleon and ^4He targets

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We investigate ϕ photoproduction on the nucleon and on the ^4He targets with a dynamical model approach by considering the Pomeron exchange, meson exchange, ϕ radiation, and nucleon resonance excitation mechanisms. The final ϕN interactions are included and described by the gluon-exchange, direct ϕN couplings, and the box diagrams arising from the couplings with πN , ρN , $K\Lambda$, and $K\Sigma$ channels. Our results for $\gamma p \rightarrow \phi p$ are in good agreement with the CLAS data. The coherent ϕ production on the ^4He target is described by using the distorted-wave impulse approximation. The predicted differential cross sections match with the LEPS data.

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