

$$\gamma p \rightarrow \phi p \rightarrow K^+ K^- p / \gamma n \rightarrow \phi n \rightarrow K^+ K^- n$$

Physics motivations

Pomeron exchange at low energies

- Pomeron exchange: multigluon exchange, well tested at high energies
- ϕ is unique to study Pomeron at low energies due to its strange content
- ϕ cross section at low energies is higher than predictions
 - hint of 2nd Pomeron trajectory
- proton channel data is limited with $E_\gamma \sim 10$ GeV
- neutron channel has not been measured
- kinematic region: $\sqrt{s} \sim 3 - 5$ GeV, low $|t|$
- observable: cross section, spin density matrix

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Physics motivations

Strangeness in the nucleons

- ϕ can also be produced from direct knockout of the strange sea-quark
- ϕ production is a promising way to probe the strangeness
- some polarization observable like beam-target asymmetry can be sensitive to rather small strange content