

SEMINÁŘ OTF

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Traces of Θ^+ pentaquark in K^+ - nucleus dynamics

ABSTRACT

Long-standing anomalies in K^+ -nucleus integral cross sections could be resolved by extending the impulse-approximation $t\rho$ optical-potential framework to incorporate K^+ absorption on pairs of nucleons. Substantially improved fits to the data at $p_{\text{lab}} \sim 500\text{-}700$ MeV/c are obtained. An upper bound on the absorption cross section per nucleon is derived, $\sigma_{\text{abs}}(K^+)/A \sim 3.5$ mb. We conjecture that the underlying microscopic absorption process is $K^+nN \rightarrow \Theta^+N$, where $\Theta^+(1540)$ is the newly discovered exotic $Y=2, I=0, Z=1$ pentaquark baryon, and estimate that $\sigma(K^+d \rightarrow \Theta^+p)$ is a fraction of milibarn. Comments are made on Θ^+ production reactions on nuclei.

Seminář se koná výjimečně v úterý 26. 04. 2005 ve 14:00
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J. Hošek/otf