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Possibility of studying eta-mesic nuclei using multi-GeV-laser electron photons

Abstract.

Possibility of formation of eta-mesic nuclei and their investigations in gamma-A reactions using tagged multi-GeV-laser electron photons at RCNP Osaka University is considered.

It is suggested to observe eta-mesic nuclei through detection of correlated (π, N) pairs in coincidence with a forward-flying proton p1. Such pairs arise from decays of the S11(1535) nucleon resonance inside the eta- mesic nucleus, $S11(1535) \to \pi N$. Proton p1 was arised in subprocess $\gamma, p \to S11(1535) \to \eta, p1$ which can produce slow η-mesons staying inside the nucleus and forming a η-mesic nucleus.

Results of simulation of eta-nuclei photoproduction are presented.

Recent experimental results on observation of eta-mesic nuclei in photoreaction using bremsstrahlung photons from the 1 GeV electron synchrotron at LPI are reviewed.

Main aims of the proposed experiment are summarised.