

## Results of the search for $\eta'$ -nucleus bound states in the LEPS2/BGOegg experiment

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Study of  $\eta'$ (958) meson property in nuclear medium is fascinating because it may probe into the mechanism of hadron mass generation. A large mass reduction of  $\eta'$  meson in nuclear medium owing to its UA(1) anomaly is expected in several model calculations. If the  $\eta'$  mass is reduced in a nucleus, the  $\eta'$  meson and the nucleus can form a bound state. We searched for the  $\eta'$ -nucleus bound states via missing mass spectroscopy of the  $^{12}\text{C}(\gamma, p)$  reaction. The experiment was carried out in the LEPS2 beam line at SPring-8 using GeV photon beam. Produced particles were measured using the BGOegg detector system. Suppression of background events arising from multiple meson productions is a key to observe  $\eta'$ -bound states. For this purpose, we tagged an  $\eta'$ -proton pair, which is expected to be emitted in the  $\eta'N \rightarrow \eta N$  absorption process of a bound  $\eta'$  in a nucleus. We report the experimental results and comparisons with theoretical calculations.

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