

Spectroscopy of η' nuclear bound states at GSI and FAIR — very preliminary results and future prospects

Donnerstag, 18. September 2014 16:30 (30 Minuten)

We have been working on a spectroscopy experiment searching for η' -nucleus bound states at GSI. The binding of an η' meson may arise from an attractive η' -nucleus interaction which leads to a mass reduction at finite density, as a result of partial restoration of chiral symmetry in association with the $U_A(1)$ anomaly.

The first experiment, GSI S-437, will take place in July and August, 2014. We will make use of the $^{12}\text{C}(p,d)$ reaction; the ejectile deuterons will be momentum-analyzed by the fragment separator (FRS). Furthermore, we will upgrade the experimental setup at Super-FRS in the FAIR era, so as to improve the sensitivity.

In this contribution, very preliminary results of the analysis of brand-new data will be reported. In addition, we will discuss future plans towards FAIR experiments.

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