

Determination of the η' -nucleus potential at low momenta*

Thursday, 28 September 2017 17:30 (20 minutes)

The real part of the η' -nucleus potential has been determined at low momenta by analyzing the η' kinetic energy distribution and the excitation function in photoproduction of η' mesons off C in coincidence with forward going protons. The forward going protons take over most of the momentum of the incoming photon beam and thus their detection allows the study of the η' -nucleus interaction at very low relative momentum. This experimental approach was previously used in the determination of the ω -nucleus potential [1]. The present measurement extends earlier determinations of the η' -nucleus potential at higher average momenta [2,3], towards the production threshold. A comparison of the data with calculations by E. Paryev [4] yields a potential depth of about -40 MeV. In agreement with [5], this indicates that the deep η' -nucleus potentials of ≥ 100 MeV, predicted in [6], can be excluded also at low momenta. Within the experimental uncertainties, there is no indication of a momentum dependence of the η' -Carbon potential.

[1] S. Friedrich et al., Phys. Lett. B 87 (2013) 045201

[2] M. Nanova et al., Phys. Lett. B 727 (2013) 417

[3] M. Nanova et al., Phys. Rev. C 94 (2016) 025205

[4] E. Paryev, J. Phys. G 43 (2016) 015106

[5] Y. Tanaka et al., Phys. Rev. Lett. 117 (2016) 202501

[6] H. Nagahiro et al., Phys. Rev. C 74 (2006) 045203

*Supported by DFG through SFB/TR16.

Primary author: Dr NANOVA, Mariana (II. Phys. Inst., University of Giessen , Germany)

Presenter: Dr NANOVA, Mariana (II. Phys. Inst., University of Giessen , Germany)

Session Classification: Hadrons in matter including hypernuclei

Track Classification: Hadrons in matter including hypernuclei