η-nuclear scattering parameters

A. Sibirtsev[a], J. Haidenbauer[a], C. Hanhart[a] and J. A. Niskanen[b]

[a]Institut für Kernphysik, Forschungszentrum Jülich
D-52425 Jülich, Germany
[b]Department of Physical Sciences, University of Helsinki
P.O. Box 64, FI-00014 Helsinki, Finland

The elusive interaction of the η mesons with nuclei remains a challenge both in theory and experiment. In particular, different theoretical approaches yield very varying results for η-nucleus scattering length, most of which deviate also from the results of the most comprehensive analyses of the existing data [1].

This talk briefly reviews some aspects and prospects of obtaining information from the final state interaction of the η mesons with light nuclei about e.g. the interesting and highly controversial issue of the possible existence of η-nuclear bound states. Special attention will be paid on the reaction $p+d \to {}^3\mathrm{He}+\eta$ on which the theoretical results and experimental data are the most abundant.

[1] A. Sibirtsev, J. Haidenbauer, C. Hanhart and J. A. Niskanen, nucl-th/0310079

E-mail: jouni.niskanen@helsinki.fi