



Contribution ID: 9

Type: **not specified**

# Search for the eta-mesic helium in non-mesonic decays

*Sunday 11 March 2018 19:30 (30 minutes)*

The negatively charged pions and kaons can be trapped in the Coulomb potential of atomic nucleus forming so called mesonic atoms. It is also conceivable that a neutral meson could be bound to a nucleus. In this case the binding is exclusively due to the strong interaction and hence such object can be referred to as a mesic nucleus. Here the most promising candidate is the  $\eta$ -mesic nucleus since the  $\eta$ -N interaction is strongly attractive. The existence of mesic nuclear matter was postulated thirty years ago, however, until now it has not been confirmed experimentally. In this talk we will report on the status of the search for the eta-mesic nuclei and the studies of the interaction of the eta and eta-prime meson with nucleons. Such system in the form of the eta mesic-helium may be created for example in the deuteron-deuteron or proton-deuteron fusions. The talk will be focused on the status and perspectives of the search for the eta-mesic helium with the emphasis on new results from the studies of the non-mesonic decay channels. In addition we will report on new results on the analyzing power for the  $pp \rightarrow pp\eta$  reaction with more than an order of magnitude improved precision which shed new light on the proton-eta interaction as well as on the production mechanism of the eta meson in nucleon-nucleon collisions.

P. Adlarson et al., Nucl. Phys. A 959, 102 (2017) 102

P. Adlarson et al., Phys. Rev. Lett. 120 (2018) 022002

**Primary author:** MOSKAL, Pawel (Jagiellonian University)

**Presenter:** MOSKAL, Pawel (Jagiellonian University)

**Session Classification:** Talks Sunday