Contribution ID: **3** Type: **Poster Presentation**

Ground and dipole-excited states in neutron-rich 8He

Light nuclei at the driplines exhibit fascinating phenomena, such as the formation of diluted structures where a tightly-bound core is surrounded by a halo of one or more weakly-bound nucleons. Among them, ^{8}He is the only four-neutron halo, and it is the most exotic nucleus on Earth, having the largest neutron-to-proton ratio in the nuclear chart (N/Z = 3). This makes it an interesting challenge for ab initio nuclear theory.

In this talk, I will present recent coupled-cluster calculations of ground and dipole-excited-state properties of ^{8}He [1], based on state-of-the-art chiral effective field theory interactions. In particular, I will discuss our predictions for the dipole polarizability, accompanied by an analysis of our theoretical uncertainty [2], and compare our results to new experimental data by the SAMURAI collaboration.

[1] F. Bonaiti, S. Bacca, G. Hagen, Ab-initio coupled-cluster calculations of ground and dipole excited states in 8He, Phys. Rev. C 105, 034313 (2022).
[2] B. Acharya, S. Bacca, F. Bonaiti et al., Uncertainty quantification in electromagnetic observables of nuclei, Front. In Phys. 10:1066035 (2023).

Primary author: BONAITI, Francesca (Institut für Kernphysik, Mainz)

Co-authors: HAGEN, Gaute (Oak Ridge National Laboratory); BACCA, Sonia (Institut fuer Kernphysik, Mainz)

Presenter: BONAITI, Francesca (Institut für Kernphysik, Mainz)

Session Classification: Poster Session