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The AGATA campaign at LNL: nuclear structure from high-resolution γ-ray spectroscopy

Content

The AGATA campaign at LNL has started in 2022 with stable beams from the Tandem-ALPI-PIAVE accelerator complex [1]. The AGATA γ -ray tracking array has been coupled to the magnetic spectrometer PRISMA as well as to other complementary detectors for heavy-ion and light particle measurement, like the silicon detectors OSCAR, SPIDER and SAURON. The physics campaign has encompassed a large variety of physics case, ranging from the sub-barrier Coulomb excitation of stable nuclei to the lifetime measurement of excited states in exotic nuclei. A new technique for lifetime measurement in heavy nuclei with the plunger technique was developed. Studies of γ -ray emission from near-barrier nucleon-pair transfer and sub-barrier fusion were also performed. The performances of AGATA in the measurement of lifetimes in neutron-rich nuclei in the N=20, N=28 and N=40 and in the heavy Pt, Os nuclei towards N=126 will be discussed, as well as the use of the AGATA array to improve sensitivity and explore new observables in reaction studies. Selected physics results from recent experiments will be presented, discussing their implication on current research in nuclear structure.

Future AGATA physics campaigns at LNL will be outlined.

References

[1] J.J. Valiente-Dobón et al., Nucl. Instr. And Meth. A, vol. 1049, 168040, 2023.

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