❖ ***Title:***

Isospin Mixing in the N=Z nucleus ^{80}Zr at medium temperature

❖ ***Spokesperson:*** A. Giaz

❖ ***Contact person:*** F. Camera

❖ ***Main objectives:***

The aim of this experiment is the measurement of the isospin mixing in hot ^{80}Zr populated using a fusion-evaporation reaction at an average temperature of 2.4 MeV. This experimental point, together with the one we recently published on PRC-R, will allow to extract the value of isospin mixing of ^{80}Zr at zero temperature. Such value is important to validate recent theoretical calculations and provides an important correction to the Fermi-transition rates. In addition it could allow the extraction of the up-down quark-mixing matrix element of the Cabibbo-Kobayashi-Maskawa matrix.

For this experiment, we used two symmetric fusion evaporation reactions ^{40}Ca + ^{40}Ca and ^{37}Cl + ^{44}Ca to form the nuclei ^{80}Zr (I=0) and ^{81}Rb (I≠0) in order to extract the isospin mixing probability from the comparison of the high-energy γ-ray yields from the Giant Dipole Resonance (GDR) decay.

❖ ***Short statement on the run itself and how AGATA operated:***

The experiment has been performed at LNL from May 11st 2011 to May 21st 2011

Beam time: 8 days (for both reactions) + one day for calibration (^{11}B+d)

Effective beam-on-target time: 117h (^{40}Ca + ^{40}Ca), 52h (^{37}Cl + ^{44}Ca) and 10h (^{11}B+d)

Beam intensity: 3.5 pnA (^{40}Ca + ^{40}Ca), 3 pnA (^{37}Cl + ^{44}Ca) and 1 pnA (^{11}B+d)

The beam was stable during all the experiment.

We have used 4 AGATA tripe-cluster coupled to 7 large volume $LaBr_3$:Ce crystals of the HECTOR+ set up. The DAQ acquisition was rather stable and we did not suffer major problems or loss of statistics because of DAQ crash.

We have used multiple trigger condition: i) one event in AGATA in coincidence with at one event in the HECTOR+ array ii) two events in HECTOR+, iii) marker and singles

We have collected a total of 15 TB

- ***Status of the analysis:***

We are now almost at the end of the presorting stage (replay of the data, PSA and tracking) which lasts 4 months. We expect to finally have the root tree of the data in the coming weeks.

- ***Any results:***

We have analyzed the calibration run of the detectors with standard sources: ^{60}Co, ^{133}Ba, ^{137}Cs, ^{88}Y and AmBe:Fe.

The sorting program was already written and waits for the root tree.

- ***Publications or talks (or an indication if there will be any):***

It is too early, even though the results of the previous measurements of isospin mixing (performed using the Hector+Garfield array) has been accepted for publication on PRC-Rapid Communications and we did several talk on the topic. However no data from this experiment have been yet shown.

- ***Any problems:***

All technical problems related to the replay and presorting of the data have been solved through the help of local LNL team.