

# Probing nucleon-nucleon correlations in the $^{48}\text{Ca}+^{208}\text{Pb}$ system: Recovery

*Tuesday, 3 October 2023 15:00 (20 minutes)*

The experiment “Probing nucleon-nucleon correlations in the  $^{48}\text{Ca}+^{208}\text{Pb}$  system below the Coulomb barrier” performed in March 2023 is of significant importance for understanding nucleon-nucleon correlations. It provides a unique opportunity to simultaneously investigate these correlations for a complete set of transfer channels, involving both the addition and removal of neutron and proton pairs. Despite encountering challenges such as target issues and ECR source problems, the data collected showed intriguing insights, especially when comparing observations above and below the barrier.

We propose a direct kinematics experiment by using a  $^{48}\text{Ca}$  beam on a  $^{208}\text{Pb}$  target, employing the superconducting

PIAVE-ALPI accelerator complex of LNL. Our goal is to obtain transfer probabilities for proton transfer channels at larger distances of closest approach for different populated states. Furthermore, we will measure angular distributions and cross sections for all open transfer channels. This direct kinematics experiment is essential for achieving our original research aims and will contribute to the knowledge of MNT’s efficacy in populating regions of the nuclear chart south of  $^{208}\text{Pb}$ .

We ask for a total of  $\{ \backslashbf 5 \text{ days} \}$  of beam time with  $\{ \backslashbf \text{PIAVE+ALPI} \}$ .

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