

AToMiQA –Young Researchers’ Grant 5th Commission INFN (2025-2026)

The new young researchers’ grant AToMiQA has the aim of developing a microdosimetry system capable of measuring in high intensity beams. To this aim the newly commissioned LNL cyclotron offers a unique opportunity to test detectors starting with low beam currents to evaluate sensitivity and performance under minimal radiation exposure, then progressively increasing intensity to assess their limits under high currents. This allows for validation in conditions that mimic clinical dose rates, including those used in FLASH radiotherapy. The broad energy range (35–70 MeV) and adjustable current (30 nA to 500 μ A) make it an ideal platform for systematically studying detector response, ensuring robustness and reliability in both standard and extreme irradiation scenarios. Currently, no other research facility offers these characteristics, as such tests can only be performed in clinical centers, where limited beam time, strict safety regulations, and restricted access pose significant challenges. The LNL cyclotron overcomes these limitations, providing an unprecedented opportunity for comprehensive detector assessment and development.

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