

Quantum materials research with radioactive probes

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ISOLDE has been a hub for the development of radioactive probe techniques and their application in solid state physics and other fields. As we enter the second quantum revolution, where non-classical properties of quantum systems are being explored for practical applications, ISOLDE can play an important role in advancing our ability to detect and manipulate single quantum objects. In this talk, I will review some current and future opportunities for the use of radioactive ion beams for research on solid-state systems for quantum communication, computation and metrology. Examples will include 3-dimensional materials, such as color centers in diamond, and 2-dimensional materials, such as spin centers in graphene. In particular, in the context of the EPIC project and future facility upgrades, I will discuss the needs of these new user communities in terms of extended beam availability, on-site support laboratories and short-term proposal turnover.

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