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Transfer reactions with Isomeric beams for Nuclear Astrophysics

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The development of high-quality isomeric beams opens the possibility to probe the influence of nuclear isomers in stellar scenarios and provide experimentally constrained parameters to astrophysical reaction rates. Such is the case of the low-lying isomers along the rp-process nucleosynthesis path, or on Galactic ^{26}Al . In this talk, I'll discuss recent experimental efforts to develop high-quality radioactive isomeric beams. Specifically, a beam of ^{24m}Na with 90% of its content in its 1+ isomeric state developed and used to perform a measurement of the $^{24m}\text{Na}(\text{d,p})^{25}\text{Na}$ reaction at the John D. Fox Accelerator Laboratory at Florida State University. Mirror symmetry arguments were then used to investigate the influence of the isomeric state in ^{24}Al on the $^{24}\text{Al}(\text{p},\gamma)^{25}\text{Si}$ reaction, relevant in rp-process nucleosynthesis.

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