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Isomer physics in the TSR at ISOLDE

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Most of the beams injected into the TSR at ISOLDE will be in their nuclear ground states. However, isomers offer additional opportunities, providing their half-lives are sufficiently long (about a second or longer). These opportunities are of two kinds. (i) The opening up of the spin and excitation-energy degrees of freedom gives access to a wider range of nuclear structure, such as pair-blocked configurations. (ii) The possibility of isomer electromagnetic decay may enable the study of phenomena that are not observable from ground states. An example of the latter could be the yet-to-be-discovered NEEC (nuclear excitation by electron capture) process, for which electron-beam interactions would be exploited. The unique environment for isomers in the TSR at ISOLDE will be discussed in this context.

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