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Laser Spectroscopy studies at the TSR

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The TSR presents an excellent opportunity to study difficult cases previously inaccessible for laser spectroscopy at ISOLDE. Deep UV transitions (within the vacuum ultraviolet) which are currently difficult to study, will be Doppler shifted by up to 30 nm at 10 MeV/A. By partially stripping the ion in the REX-EBIS it is possible to preferentially populate metastable states with transitions that can be probed by existing laser technology. Additionally the TSR could be used to study elements that can only be efficiently produced at ISOLDE through chemical separation techniques, since the REX-EBIS will break up molecular beams during the charge breeding process. The recirculating beam in the TSR offers a significant gain in experimental efficiency, since the same ions can be probed many times. By storing a single ion stored in the ring for 1s will allow it to circulate 105 times, resulting in a significant gain for laser spectroscopy. This work builds on the experience gained from previous laser spectroscopy experiments at the TSR, ESR and ISOLDE

The talk will present the possibilities of performing laser spectroscopy experiments on radioactive isotopes using the TSR at ISOLDE.

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