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TRIUMF resonance ionization laser ion source operation lessons & highlights

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TRIUMF's isotope separator and accelerator facility is an ISOL facility based on a 500MeV proton driver beam with a beam intensity of up to 100microA on target. The ion sources in use are TRIUMF's FEBIAD, surface ion source and resonance ionization laser ion source (TRILIS). The TRILIS operational experience –delivering more than 50% of all beams and scheduled shifts - with all solid state laser based laser systems, operated by a small operations team will be critically discussed and analyzed and the achievements of the past years presented.

This analysis is essential to the ongoing facility upgrade to the advanced rare isotope laboratory (ARIEL). ARIEL is going to add two additional RIB target stations, one based on an additional 500MeV, up to 100microA proton driver beam, and one based on photo-fission from a 30MeV, up to 10mA electron driver beam, to simultaneously deliver RIB to the ISAC experimental infrastructure, that can be separated into “low energy”, “medium energy” and “high energy” experimental areas, with the “medium” and “high energy” areas using post-accelerated RIB.

In this scenario, it is envisioned to operate the two additional RILIS alongside TRILIS –without major resource increases - to provide the RIB for the experimental nuclear and particle physics programs.

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