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Delivering multiple, independent RIB simultaneously: Technical and operational challenges

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ISAC is an ISOL-type facility at which RIB are produced by direct reactions of 480–500 MeV protons on a thick target in one of two target stations. Like other ISOL-type facilities, ISAC is limited to the production and delivery of a single RIB at any given time (though an additional stable beam from an offline source may be delivered in parallel). ARIEL, the Advanced Rare-IsotopE Laboratory, will provide for the production and delivery of one, and ultimately two, additional RIB, the first produced by photofission on actinide targets using electrons from a new superconducting electron linac and the second by direct and indirect reactions with protons from TRIUMF's main cyclotron. This will allow for the simultaneous delivery of two, and ultimately three, independent RIB to experimental areas at ARIEL and ISAC, with stable-beam delivery still possible beyond that.

The shift from single-user to multi-user operation will introduce significant technical and operational challenges that RIB facilities have not yet had to address. Almost all aspects of facility operation, including scheduling (beam, target, and maintenance), personnel requirements, and technical considerations such as the development of high-level applications, will become more complex as the first RIB from ARIEL targets become available. The anticipated impact of multi-user operation will be discussed and proposals for addressing the issues associated with it presented.

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