

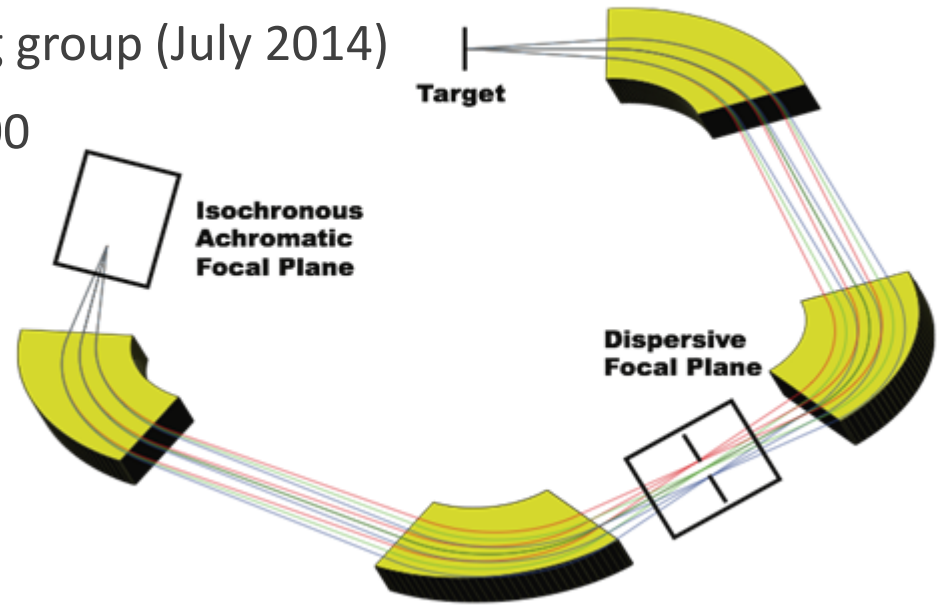
ISLA

AN ISOCHRONOUS LARGE ACCEPTANCE
SPECTROMETER AND SEPARATOR FOR
REACCELERATED BEAMS

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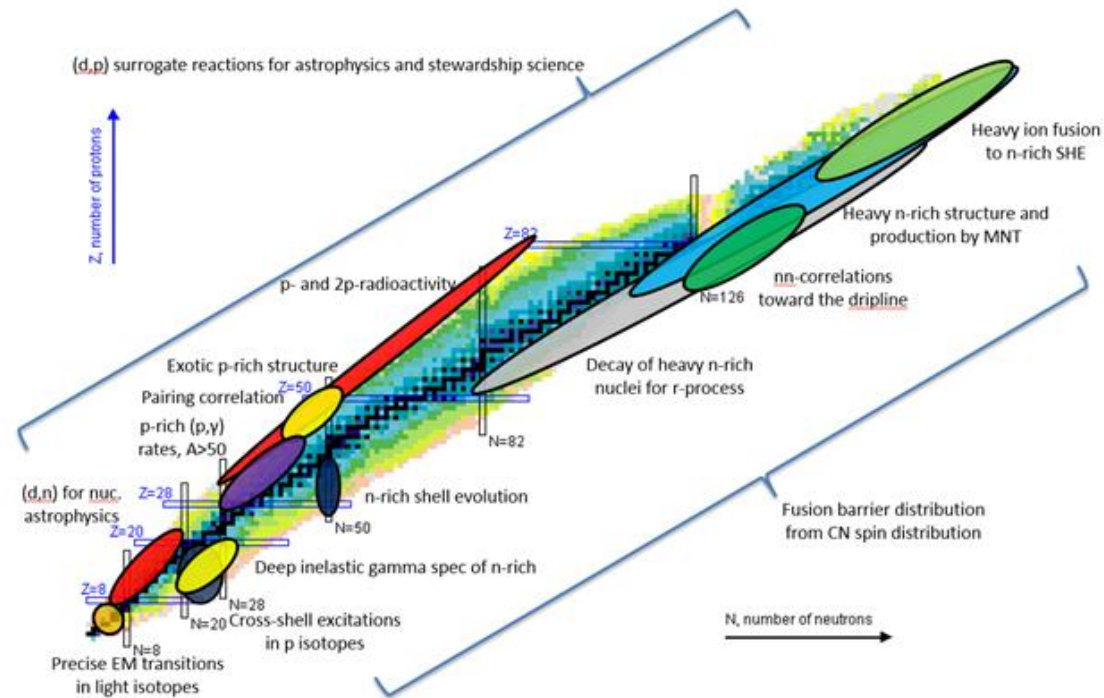
What is ISLA

- Isochronous spectrometer, based on the TOFI design at LANL but with much larger acceptance, *for ReA12 beams*.
- The selected design of the working group (July 2014)
- High M/Q resolving power, $R > 1000$ (symmetry reduces aberrations)
- Large acceptance
 - 64 msr
 - +/- 10% momentum
- Flexible M/Q spectrometer
 - Small focal plane (implantation)
 - Space about target for GRETA
 - Incoming beam swinger allows operation off zero degrees (up to 50 degrees)
 - First half could be used in a VAMOS-like mode
 - Could be operated in gas-filled mode
 - Low energy RF kicker allows physical separation of products by M/Q



Physics case for ISLA

- Precise measurements of electromagnetic transitions.
- Transfer studies of shell evolution, pairing and n-n correlations.
- Astrophysical processes: r, rp, cosmochronometers, etc.
- Multi-nucleon transfer with FRIB beams to n-rich SHEs to work toward the island of stable heavy elements.
- Fusion evaporation with FRIB beams, esp. to n-deficient species (p- and 2p-radioactivity)
- And more... and these are just those submitted.



ReA12 with FRIB beams makes these studies possible, but only if we have a flexible spectrometer to remove unreacted beam and identify the products. ISLA can meet these needs

More information - outlook

- Budget: M\$10.0
 - Past experience
 - 20%-25% contingency
 - Swinger, RF kicker, cryogenic lines, basic detection
 - Assumes cryogenic capacity exists
- See the whitepaper for more information on physics case and design (linked from lecmeeting.org).
- Large community interest
 - 18 physics case proposals involving 15 distinct institutions (majority of RISAC benchmarks)
 - Well subscribed workshops
- Next
 - Refine designs of swinger, low energy RF kicker, large gap dipoles
 - Developments in ReA time structure to allow clear time of flight M/Q identification
- Must start funding by 2016 to start with early FRIB, ideally start next steps now

A Recoil Separator for ReA12

A whitepaper on the science case and proposed technical solution, ISLA

Produced by the ReA12 Recoil Separator Working Group

Release date: August 19, 2014

https://people.nslc.msu.edu/~amthor/ReA12_RS_whitepaper.pdf