



# Recent developments in the design of the HIE-ISOLDE Superconducting Recoil Separator (ISRS)

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for the ISRS Collaboration for the ISRS Collaboration

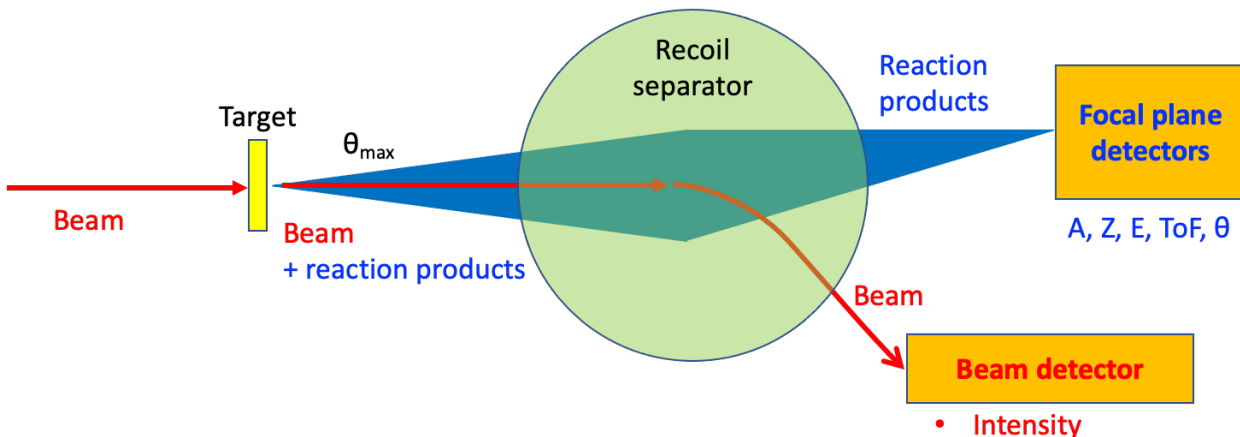
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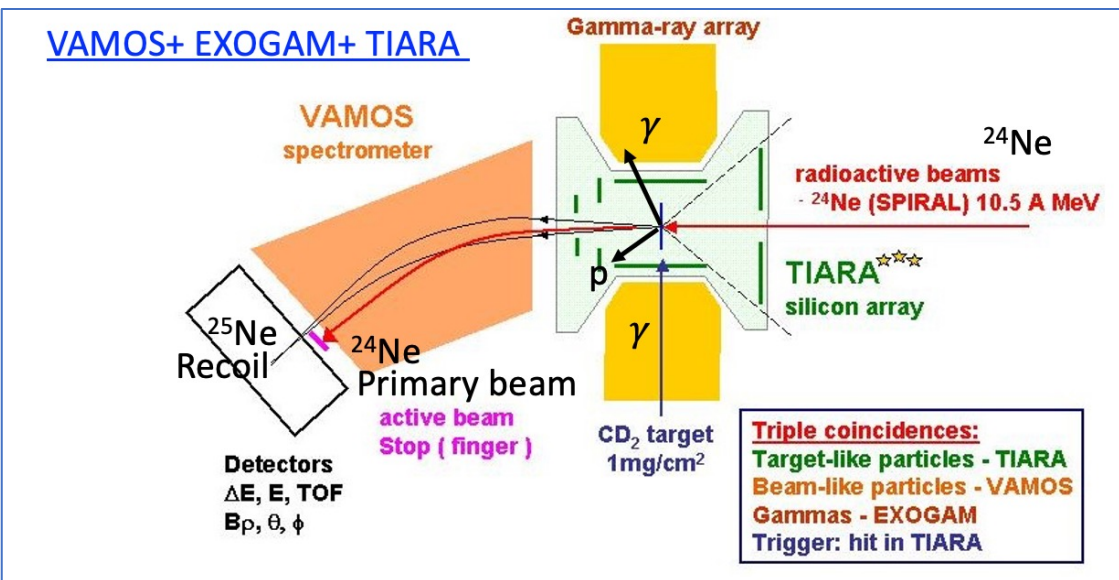
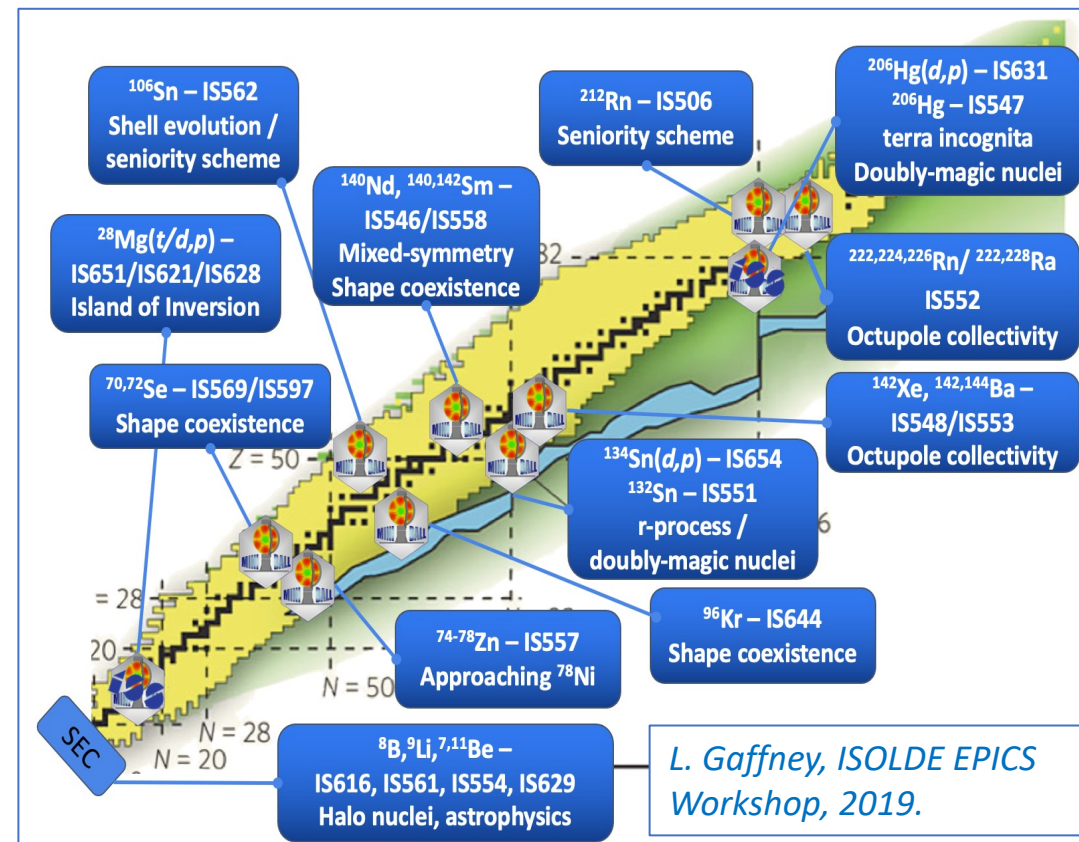
# Recoil Separators

- Use to detect forward focussed reaction products (recoils): A, Z, E, ToF,  $\theta$
- Separate them from the primary beam.



A Recoil Separator can bring new and exciting possibilities to the HIE- ISOLDE physics program.

## Selected physics cases investigated at HIE-ISOLDE



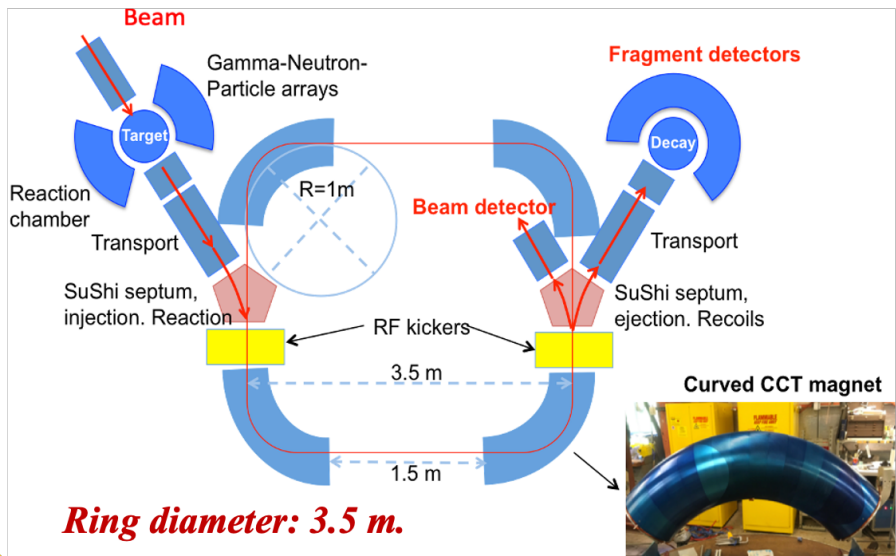
- Particle -  $\gamma$  - n coincidences
- Selection of reaction channel, background removal, etc

# The ISOLDE Superconducting Recoil Separator (ISRS)

- (1) Mini-Storage ring < 5 m diameter – Cyclotron frequency
- (2) Fixed Field Alternating Gradient – large  $\Delta(\rho, E_k, m, Z)$
- (2) Curved Canted-Cosine Theta-Multifunction SC solenoid
  - Iron free magnets
  - Cryocooling
  - Magnetic shield

## Conceptual layout of the separator

The ring consists of curved CCT magnets, straight sections, injection/extraction systems and beam diagnostics.



*A prototype of an assembled curved CCT magnet (NIMA (2020) 163414)*

