POTENTIAL PROGRAM

PRECISION DECAY MEASUREMENTS

AT

HRIBF / ORNL

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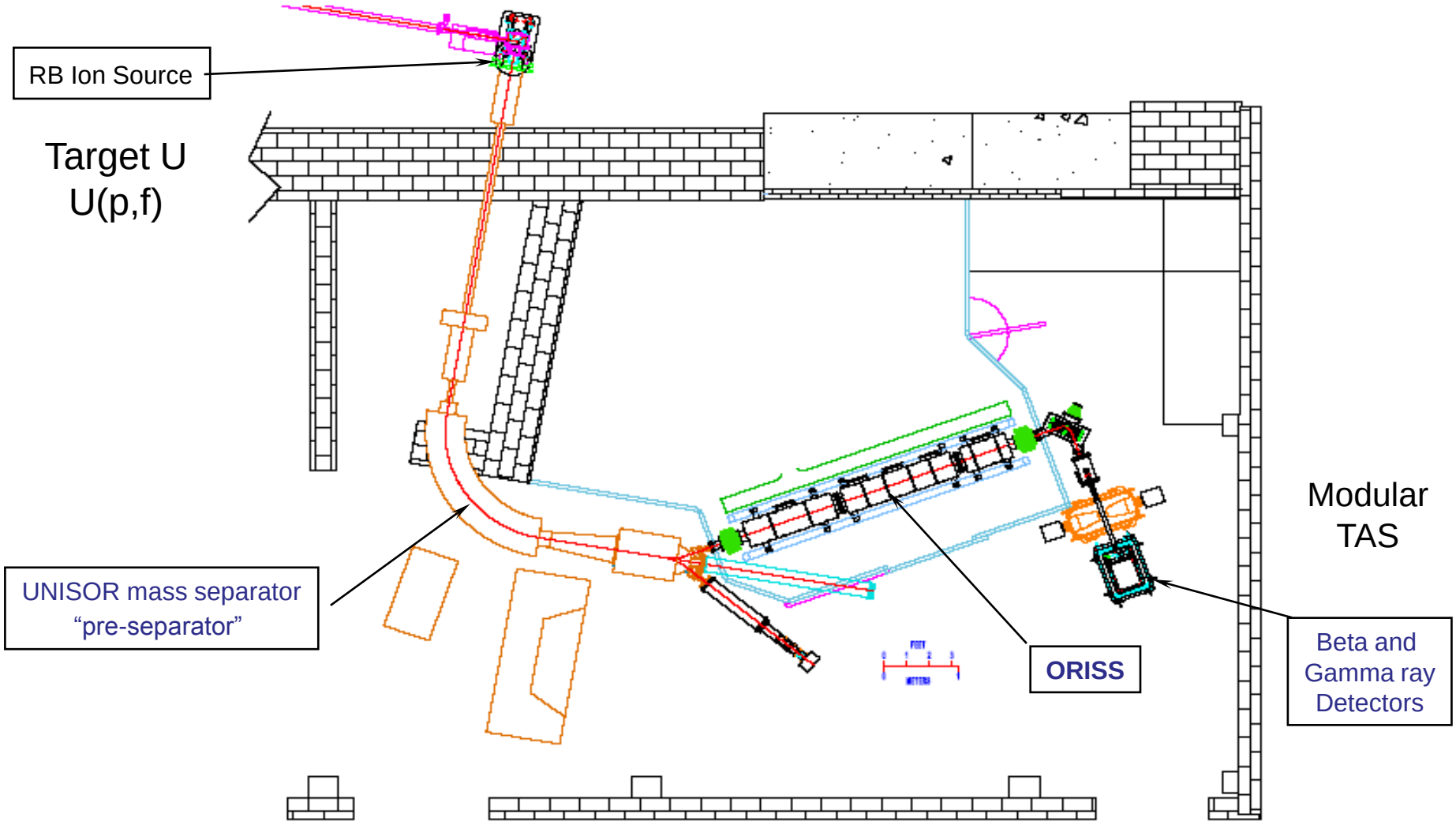
Oak Ridge Associated Universities

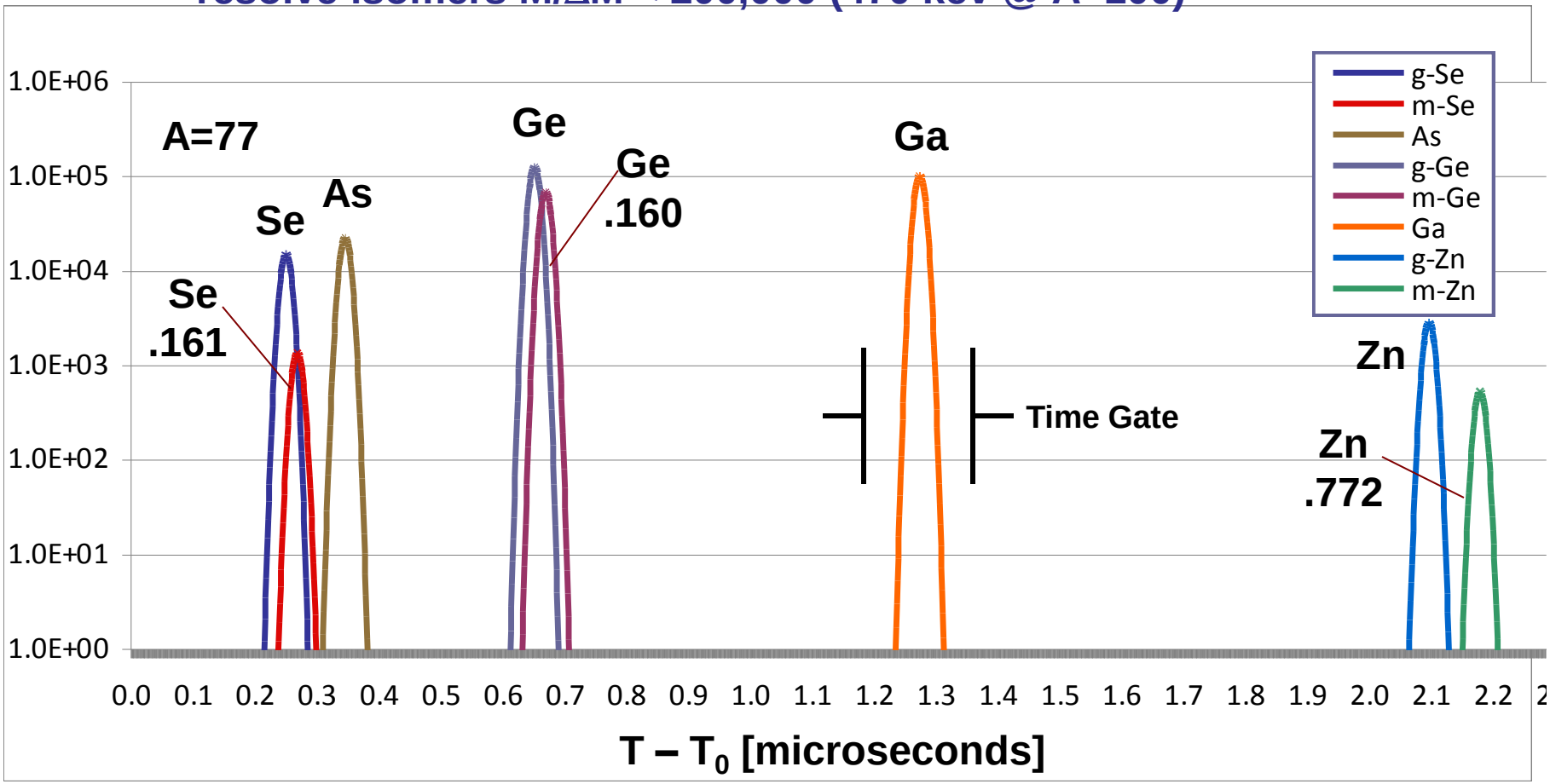
Strawman layout of ORISS at UNISOR



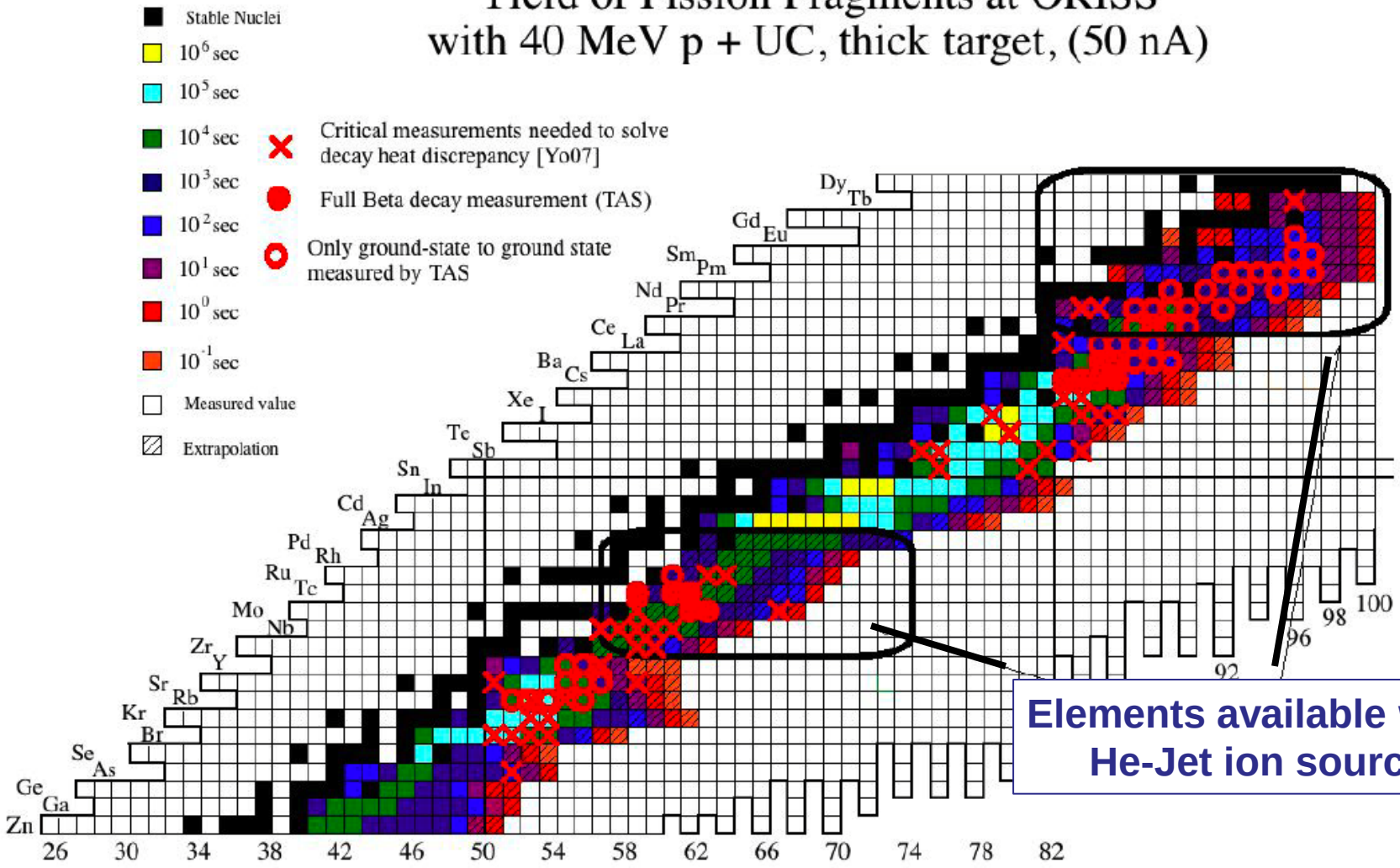
Oak Ridge Isomer Spectrometer and Separator

Simulation: M/ΔM ~ 400,000

- resolve all isobars
- resolve isomers M/ΔM < 200,000 (470 kev @ A=100)



Yield of Fission Fragments at ORISS with 40 MeV p + UC, thick target, (50 nA)



Elements available with He-Jet ion source

Capabilities:

- **All fission fragments available (with HeJet ion source) at sufficient intensity using low intensity tandem as primary beam.**
- **ORISS - Ultra high mass resolving power, M/ΔM up to 400,000 (FWHM) Provide pure beams of any isotope**
- **MTAS – Modular Total Absorption Spectrometer**
- **Wide variety gamma-ray detectors, neutron detectors available**
- **Experienced decay spectroscopists willing to focus on NE problems**

- **Mission**

Precision decay studies of interest for:

- **Advanced Nuclear Fuel Cycles**
- **Storage**
- **Transportation**

Train next generation Nuclear Engineers – partner with nuclear engineering departments

Focus on problems of interest to Nuclear Energy

- **Measure:**
  - **average gamma and beta energy per decay**
  - **branching ratio for bet-delayed neutrons**
  - **yields, decay properties, of isomers**