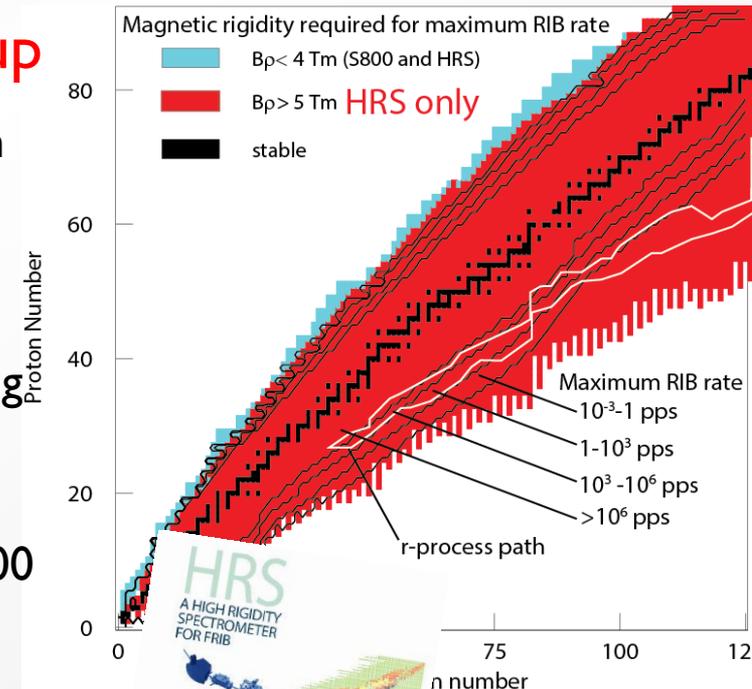


A High Rigidity Spectrometer for FRIB

hrs.lbl.gov

HRS working group

- The HRS will increase the luminosity for experiments with fast rare-isotope beams for the **vast majority of nuclei available** at FRIB – gain factors of 10 or more for the most neutron-rich nuclei
- The HRS will impact science associated with all overarching scientific themes of FRIB
- HRS will not be immediately available at FRIB – great opportunities for early-FRIB science will exist with the S800 spectrograph or sweeper magnet
- Pre-conceptual layout in progress: meet the stringent requirements for the science program presented in the HRS whitepaper (Support from by DOE Office of Science, Nuclear Physics)
- Biweekly online meetings: close coordination with users, working groups of other devices (GRETA, MoNA-LISA etc), FRIB fragment separator and magnet groups...
- Development of novel techniques for tracking (see e.g. Workshop on Tracking Detectors for Fast Beams during LEC meeting) and coordinated DAQ for multiple detector systems (end-station and beam-line (aligned with activities of DAQ working group))



HRS pre-conceptual layout: current status

Facilitates the requirements set by the diverse science program of the HRS whitepaper

- Invariant mass spectroscopy (“QQD” – 12m long) and high resolution (“DQQQ” – 26m long) configurations
- Achromatic & angular/momentum dispersion matching ion-optical modes
- Other significant devices that will be used with HRS are incorporated in layout (GRETA, MoNA-LISA etc)
- Large acceptance beam line from FRIB fragment separator to HRS
- MSU commissioned a conceptual design of a new high bay that will house the HRS

