



# Decay Station Working Group

(Conveners: Grzywacz/Liddick/Seweryniak/Scielzo)

Decay studies will access the **most exotic** isotopes at FRIB  
Measurements possible down to  $10^{-4}$  pps.

## Nuclear structure:

- Investigation of the **limits of nuclear existence**
- **Shell-evolution** far from stability
- Evolution of **shapes and collective** motion
- Nucleon-nucleon **correlations** revealed in particle decays
- **Exotic decay modes** – two proton emission, beta-delayed fission, beta-delayed multi-neutron emission, direct neutron emission

## Nuclear astrophysics:

- Nuclear **lifetimes and branching** ratios for r-process and rp-process nuclei
- Measurement of the **decay strength** and **level density** distribution for r-process nuclei
- Measurement of **key resonances** for nucleosynthesis

- **New instrumentation** needed to fully exploit 400 kW FRIB capabilities
- **Funding request** for new instrumentation in 2018.
- FRIB Day-One will be able to exploit **suite of existing** detectors (CARDS, Clovershare, MTAS, 3Hen, SUN, VANDLE...)
- **Community** effort (16 institutions)
- Accumulated expertise to **develop and implement** Decay Station !!!

