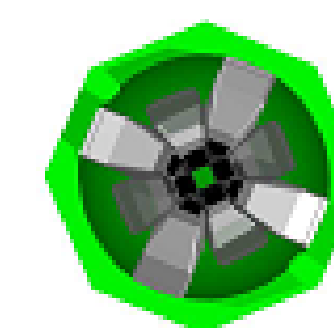




# VECC-INGA:



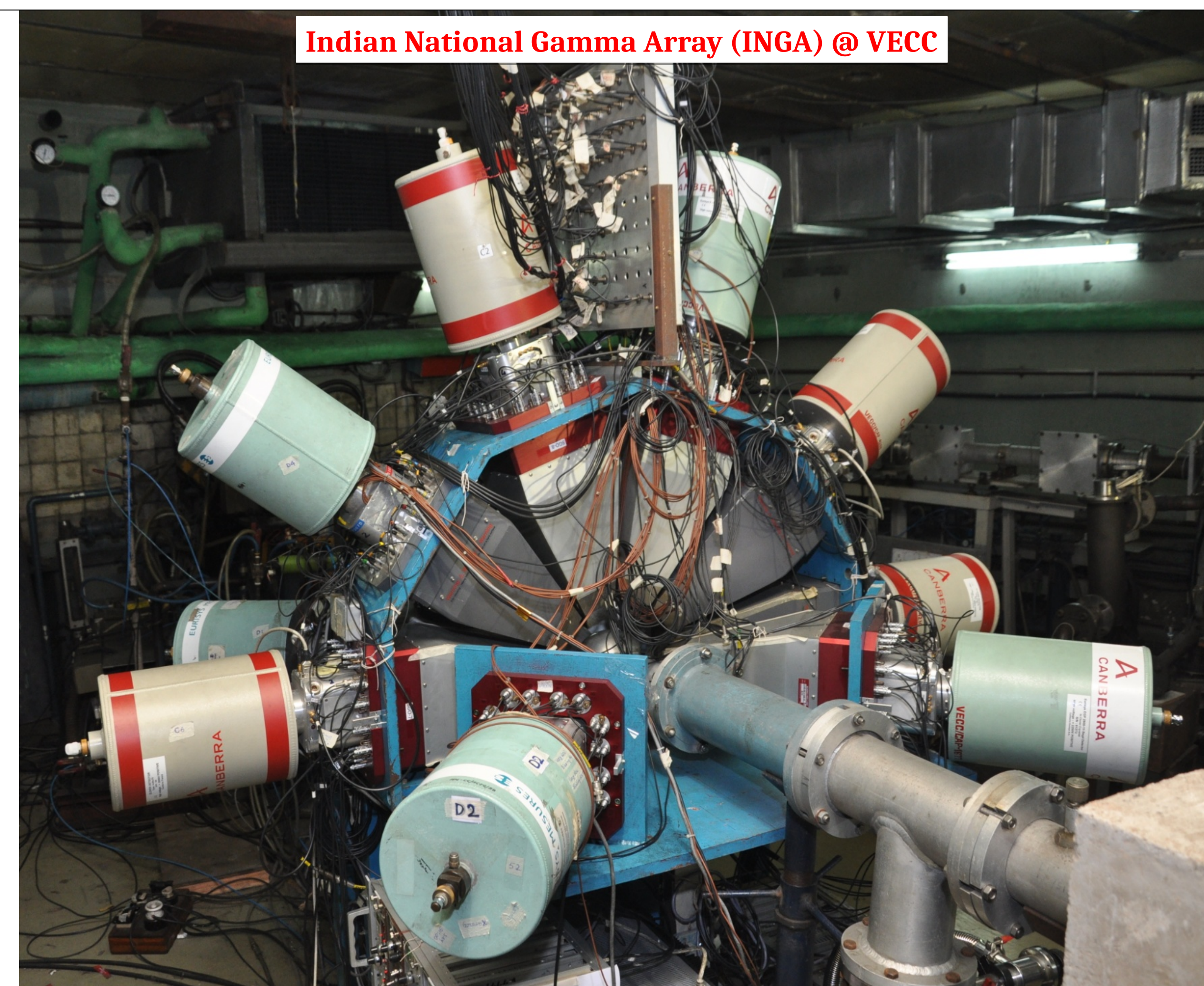
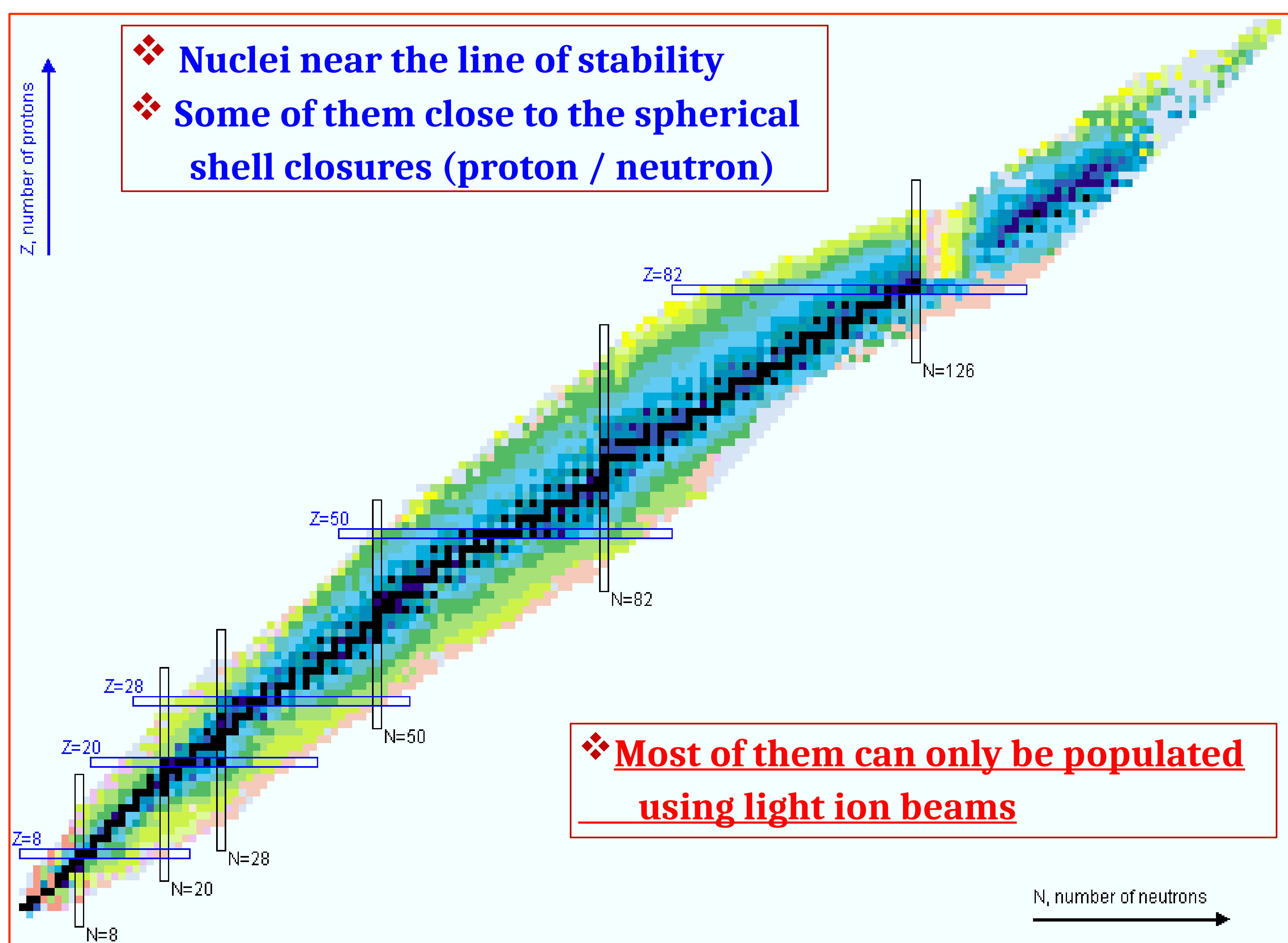
## An exploration of nuclear structure with light ions

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### Region of Nuclear landscape probed at INGA-VECC



INGA phase 1 : 7 Clovers with BGO + 1 LEPS

INGA phase 2 : 8 Clovers with BGO + 2 LEPS

- 4 Clovers at 90°
- 2 Clovers at 125°
- 1 Clover at 40°
- 1 LEPS at 40°

- 5 Clovers at 90°
- 2 Clovers at 125°
- 1 Clover at 40°
- 1 LEPS at 40°
- 1 LEPS at 90°

### Advantages of light ion beams for gamma spectroscopy @ INGA-VECC

- ❑ Selective channels are only populated at a particular energy
- ☑ Cross section ~ 1000-1500 mb
- ☑ Statistics within reasonable beamtime
- ❑ Minimum beam-energy loss in target
- ☑ Thick target can be used for production of a single channel
- ❑ Minimum overlap of neighboring reaction channels
- ☑ Clean spectroscopy
- ❑ Population of states is complimentary to heavy ion induced reactions

- Complete spectroscopy
  - ☑ Yrast and non-yrast states
    - "horizontal spectroscopy"
  - ☑ Low-lying single particle states
  - ☑ Vibrational states
  - ☑ Mixed Symmetry States
- Search for exotic decays and shapes
- ☑ Octupole shape, wobbling
  - connecting transitions
- Alpha / proton induced fission
  - ☑ Population of neutron-rich nuclei

### Pulse Processing and DATA Acquisition System

**Digital**

- 5 modules, 12 bit
- 3 detectors in each module
- 250 MHz sampling
- List mode time stamped data

➢ Setup by UGC-DAE-CSR, Kolkata Centre  
➢ Used in the entire campaign

**Analog**

- VME based electronics
- 16 Channel Mesytek amplifier
- TFA-CFD based circuit for ACS
- 32 channel 13 bit ADC

➢ Alternative system from VECC

**INGA Phase I**

- 15 Experiments
- 28-40 MeV a-beam
- 7-10 MeV proton

**INGA Phase II**

- 7 Experiments
- 40 - 52 MeV a-beam
- RF tagging

