Accurate Neutron-Nucleus Reaction

measurement Instruments (ANNRI)

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- Neutron-capture gamma-ray measurements for nuclear engineering, elemental analysis and nuclear astrophysics
- The neutron time-of-flight method enables the measurement in a wide energy range
- Minor actinides 244Cm, 246Cm etc.
- Long-lived fission products 129I, 99Tc, 93Zr etc.
- Elemental analysis Cosmochemistry, Environmental science etc.

Gamma-ray detectors

To derive neutron capture cross sections and to quantify elemental concentrations, prompt γ -rays emitted via the neutron capture reaction are measured with the following two detector systems:

- High resolution, high efficiency Ge spectrometer
- Energy resolution : $E_{\gamma} / \delta E_{\gamma} = 10^3$
- Detection efficiency : 3.6% at 1.33MeV
- Low-background NaI scintillation detectors

Specification
Coupled moderator (liquid H₂)
Flight path

 L₁=21.5m (Ge spectrometer)
 L₂=27.9m (NaI scintillators)

Neutron energy : E_n > 0.0015eV
T₀ chopper at 13m
Disk chopper at 15m