

11. Stand-alone γ/e^- Facility for Nuclear Spectroscopy and Astrophysics

1. Measuring Narrow Doorway States, embedded in Regions of High Level Density in the First Nuclear Minimum, which are identified by specific (γ, f) , (γ, α) , (γ, p) , (γ, n) Reactions and allow to map out the Nuclear Potential Landscape
2. Precision Tests of Fluctuating Quantities in Nuclear Physics of Highly Excited Nuclear Levels in Comparison to Random-Matrix-Theory and Quantum Chaos
3. Precision measurement of the dipole polarizability α_D of ^{208}Pb with high intensity, monoenergetic MeV γ -radiation for the evaluation of neutron skin and the enhancement of UNEDF theory
4. Use of high-resolution inelastic electron scattering to investigate deformed nuclear shapes and the scissors mode
5. Parity violation in a (e, e') process
6. Nuclear Transitions and Parity-violating Meson-Nucleon Coupling
7. Study of pygmy and giant dipole resonances in lead isotopes by direct γ excitation
8. Gamma scattering on nuclei The Pygmy Dipole Resonance (PDR) of deformed nuclei
9. Fine-structure of Photo-response above the Particle Threshold: the (γ, α) , (γ, p) and (γ, n) Reactions
10. Nuclear Resonance Fluorescence on Rare Isotopes and Isomers
11. Multiple Nuclear Excitons

Stand-alone γ/e^- Facility for Astrophysics

1. Neutron Capture Cross Section of s -Process Branching Nuclei with Inverse Reactions
2. Measurements of (γ, p) and (γ, α) Reaction Cross Sections for p -Process Nucleosynthesis