

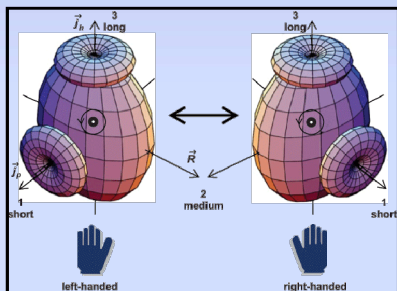
DURGA Facility at DHRUVA Reactor

A unique facility in the country for prompt gamma coincidence spectroscopy using thermal neutron beam

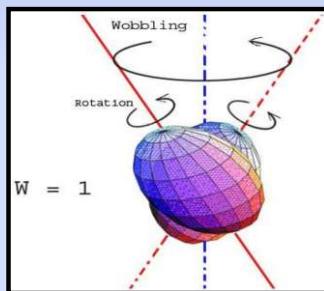
Physics to be addressed:

Fission Fragment Spectroscopy:

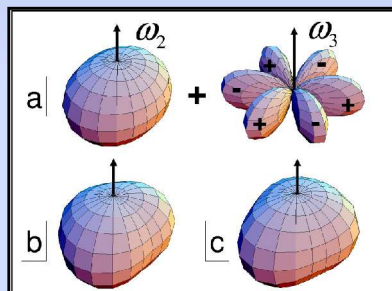
1. Evolution of nuclear shell structure in neutron-rich nuclei, new magic numbers.
2. Exotic nuclear phenomena, such as, nuclear triaxiality, stable octupole deformation (pear-shaped nucleus), nuclear chirality, shape-coexistence, wobbling mode of excitations etc.



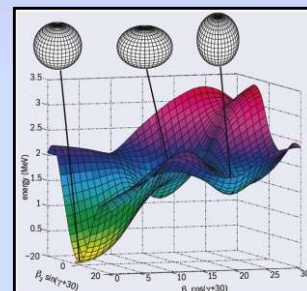
Chiral rotation in nuclei



Wobbling excitation in nuclei



Octupole phonon Condensation in nuclei

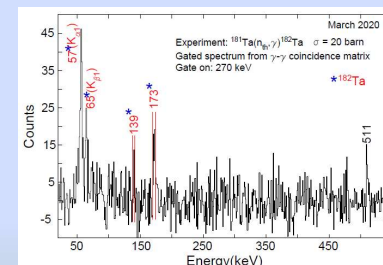
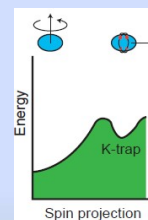
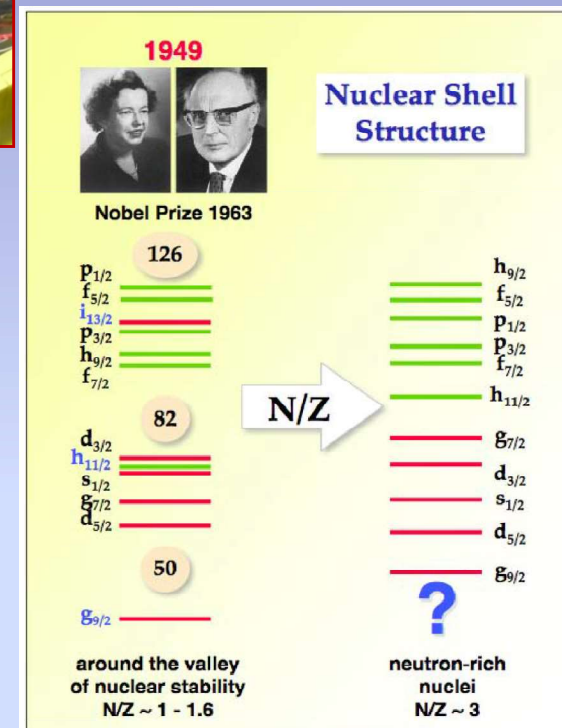
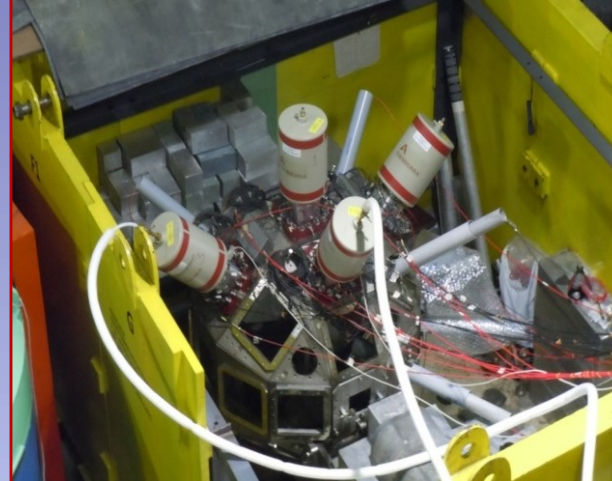


Shape-coexistence in nuclei

3. Nuclear isomers in nuclei with higher neutron to proton ratio and their implications.

Capture Gamma Spectroscopy (n,γ):

1. Low-lying excited states of deformed nuclei; quadrupole vibrations superimposed on rotation (β and γ vibrations).
2. Search for multi-phonon vibrational states; The existence of collective two-phonon vibrations ($\beta\beta$, $\beta\gamma$, and $\gamma\gamma$) has been an open question.
3. Low-lying $K^\pi = 0^+$ excited band structures in deformed nuclei.



Recent results

