TRI ALPHA ENERGY
THE POWER OF INGENUITY

Egg Irradiation Experimental Setup

Key Design Requirements

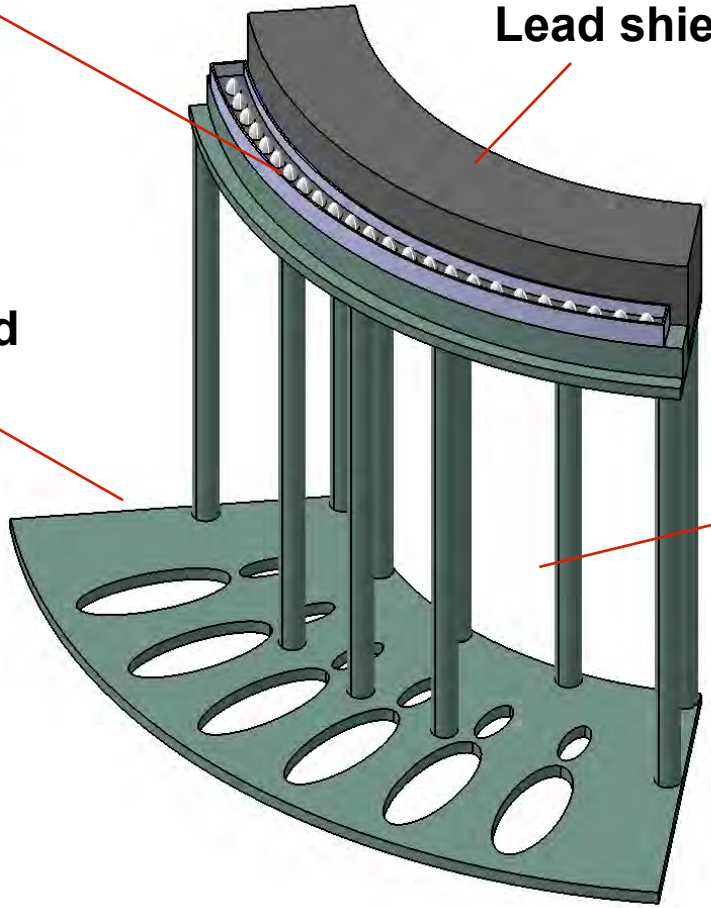
- Lead shield to protect eggs from γ's
  - 6" × 6", ~ 60° arc, conformal to the reflector
  - Stable support stand to prevent overturning from seismic event
- Egg container
  - Accurately position > 24 eggs behind the lead shield
  - Equal distance from the reactor core
  - Thermal insulation to minimize egg cooling
  - Proper materials to avoid excessive activation
- Apparatus for lowering/raising the egg container
  - Accurate positioning and smooth ride to avoid egg jostling

Preliminary Conceptual Design

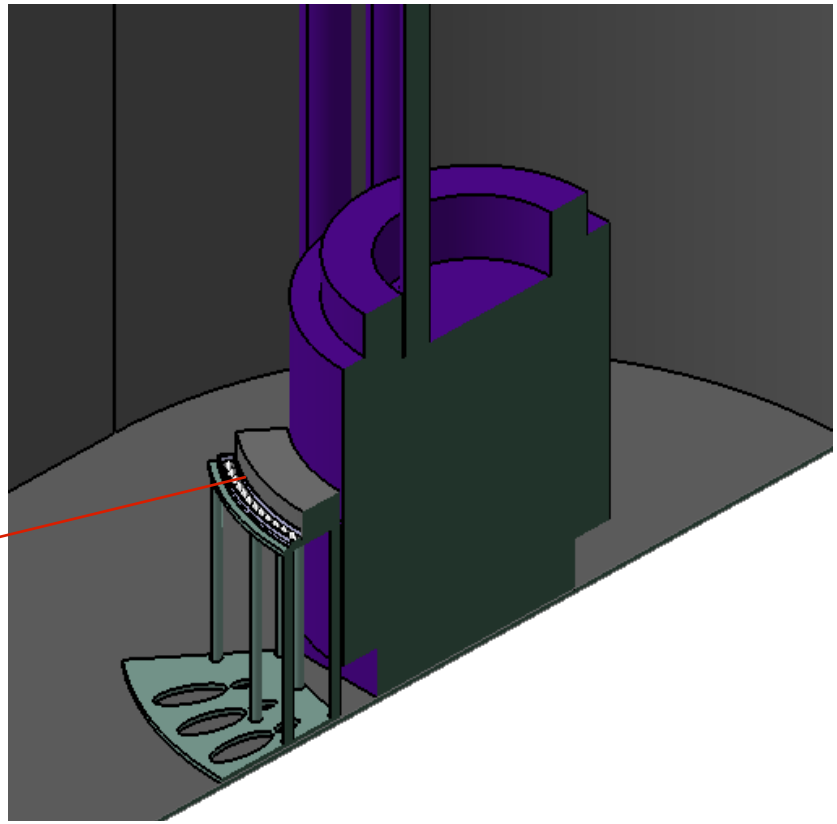
Egg Container/Positioner with individual seats

Lead shield

Support stand

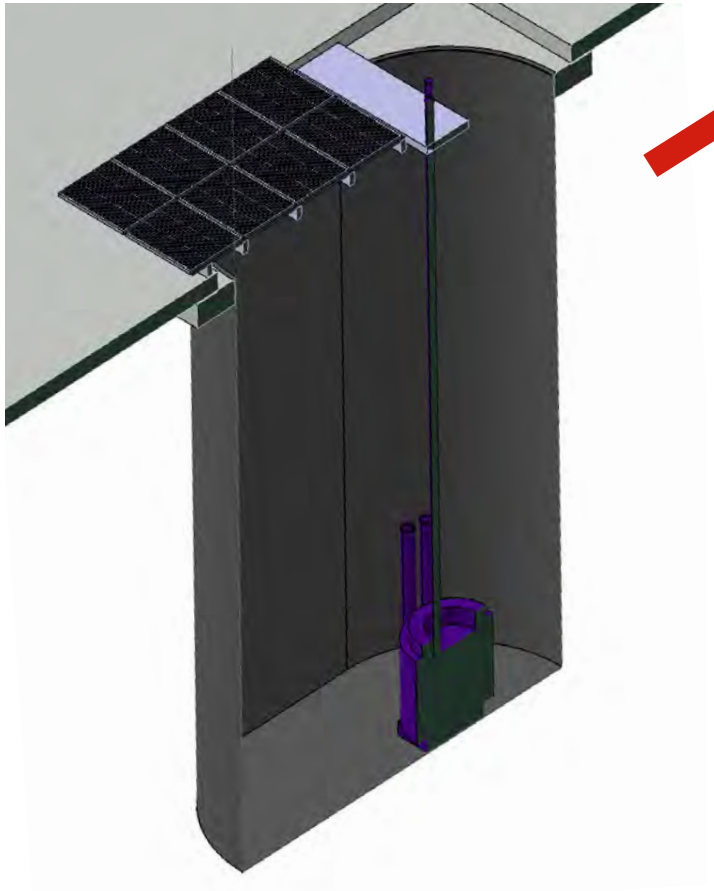


Stand in position at the horizontal midplane of the reflector

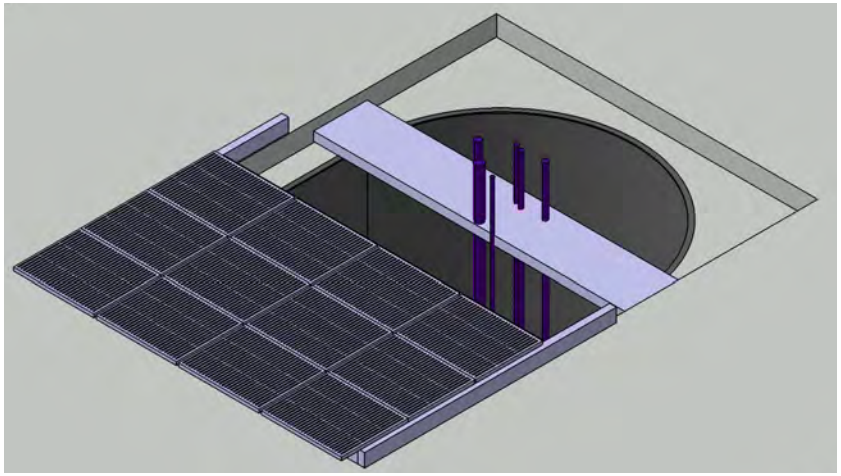


Installation of the Stand

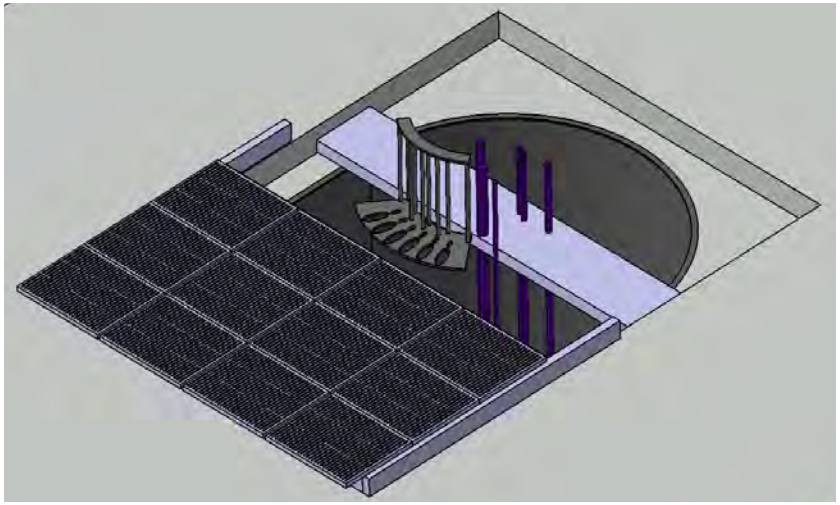
Existing Reactor Configuration



Crossbeam removed



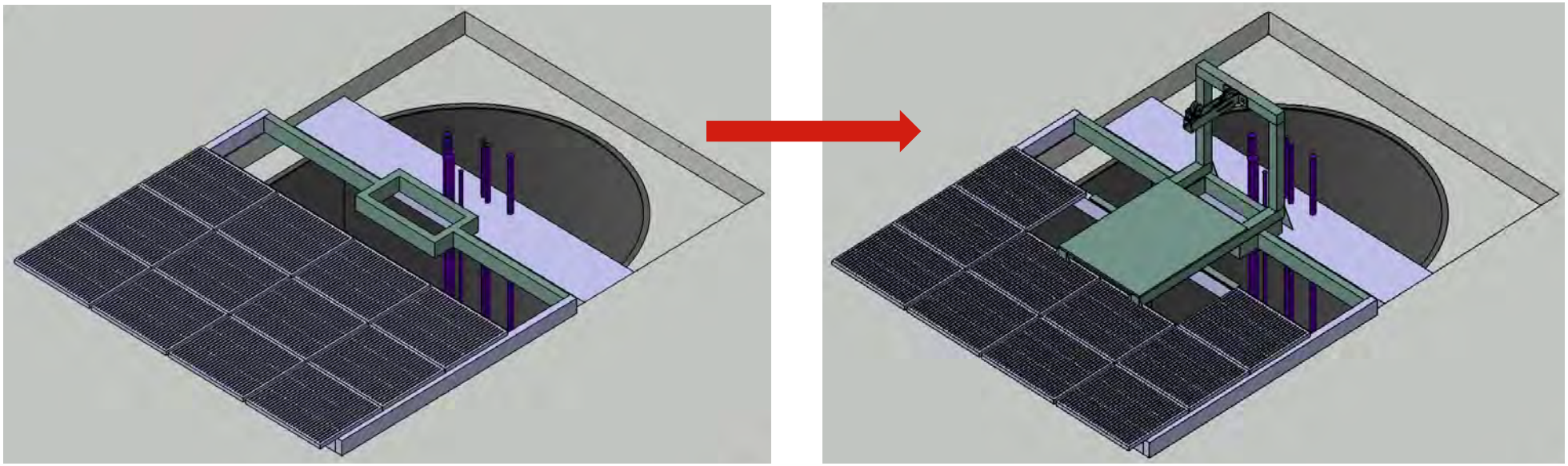
Stand lowered in position with crane



Staging Platform

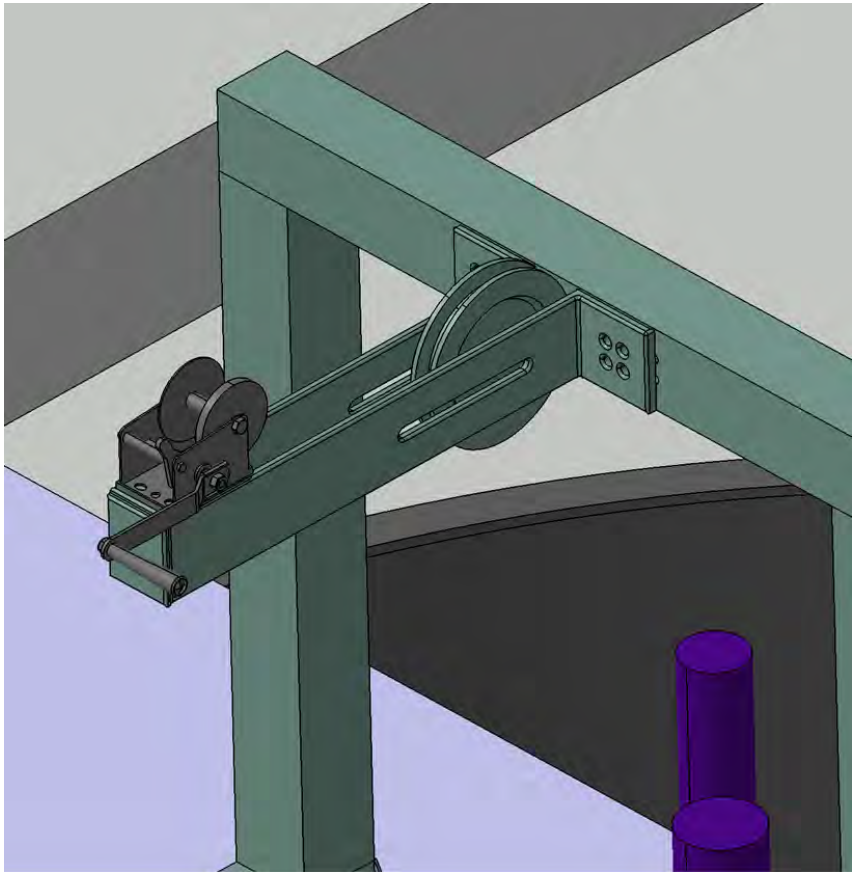
New crossbeam and support hardware

Upper assembly with adjustable hand crank for bi-axial positioning



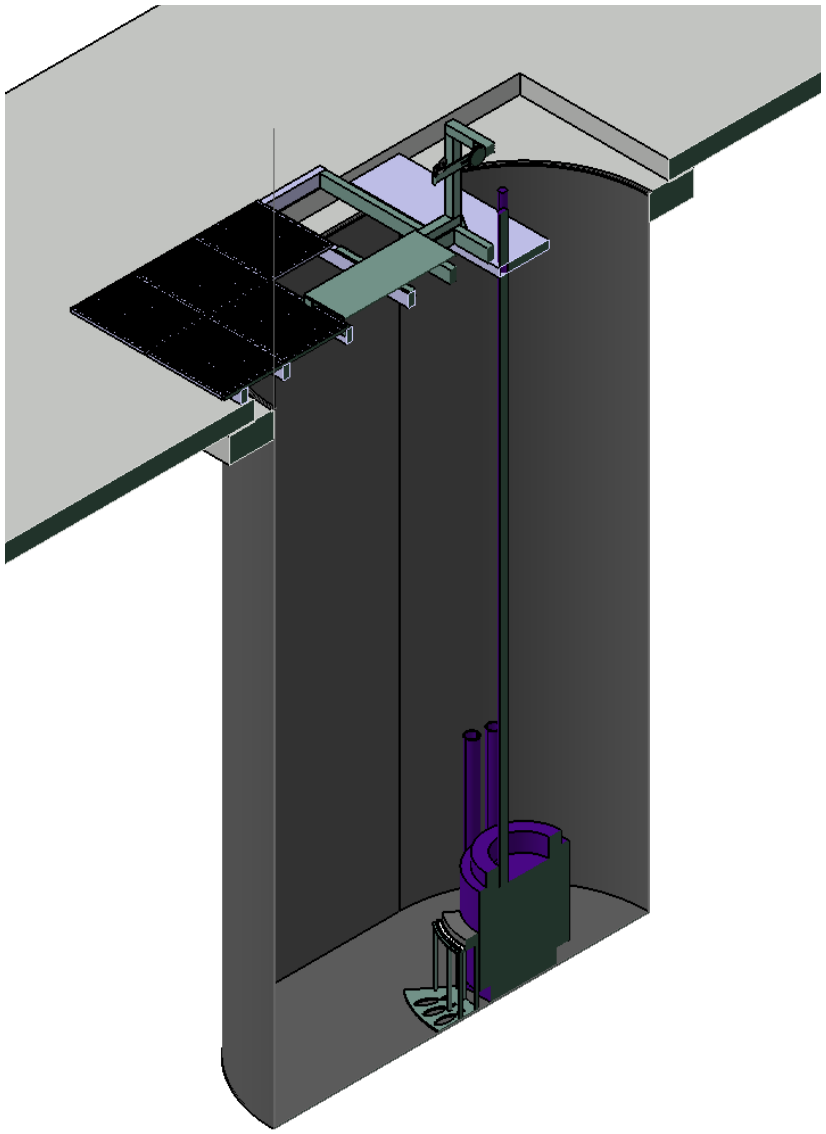
- Experiment is safely inserted to and extracted from the stand using hand crank and stable staging platform

Adjustable Hand Crank for Bi-Axial Positioning



- Guides for lowering/raising the container will also be provided

Cross Section View of Final Configuration



Ongoing Efforts

- Analysis
  - Optimize material thickness and geometry
  - Define container materials
  - Determine activation potential
- Refining tooling/part design
  - Crank
  - Pulley
  - Slotted holes
- Fabrication
  - Select vendors and address material concerns