Lawrence Berkeley National Laboratory

Welcome and Introduction

Composites Workshop

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General Information

- DOE Facility
- Call 911 from a Lab phone in an emergency
- Due to construction the speed limit is 15 mph
- Do not attempt to touch any wild animals onsite
- No smoking, except outside at designated locations
- Defibrillator located various places on-site

- Our address:
  B66, room 316
  LBNL
  One Cyclotron Road,
  Berkeley, CA 94720
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Earthquake Response

Drop down on the floor.

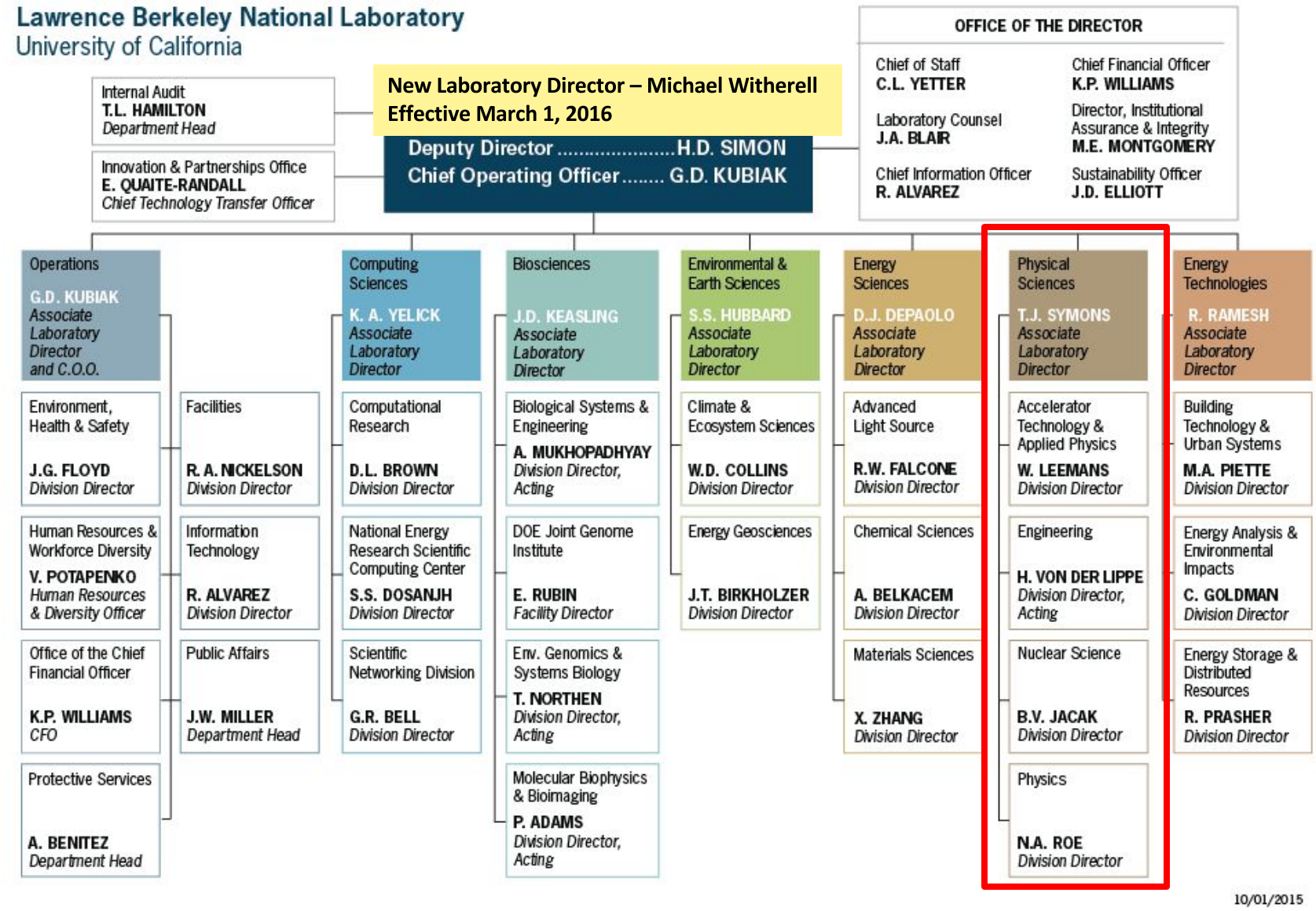
Cover under a sturdy desk, table or other furniture.

Hold on to furniture if it isn't bolted to the floor and be prepared to move with it.

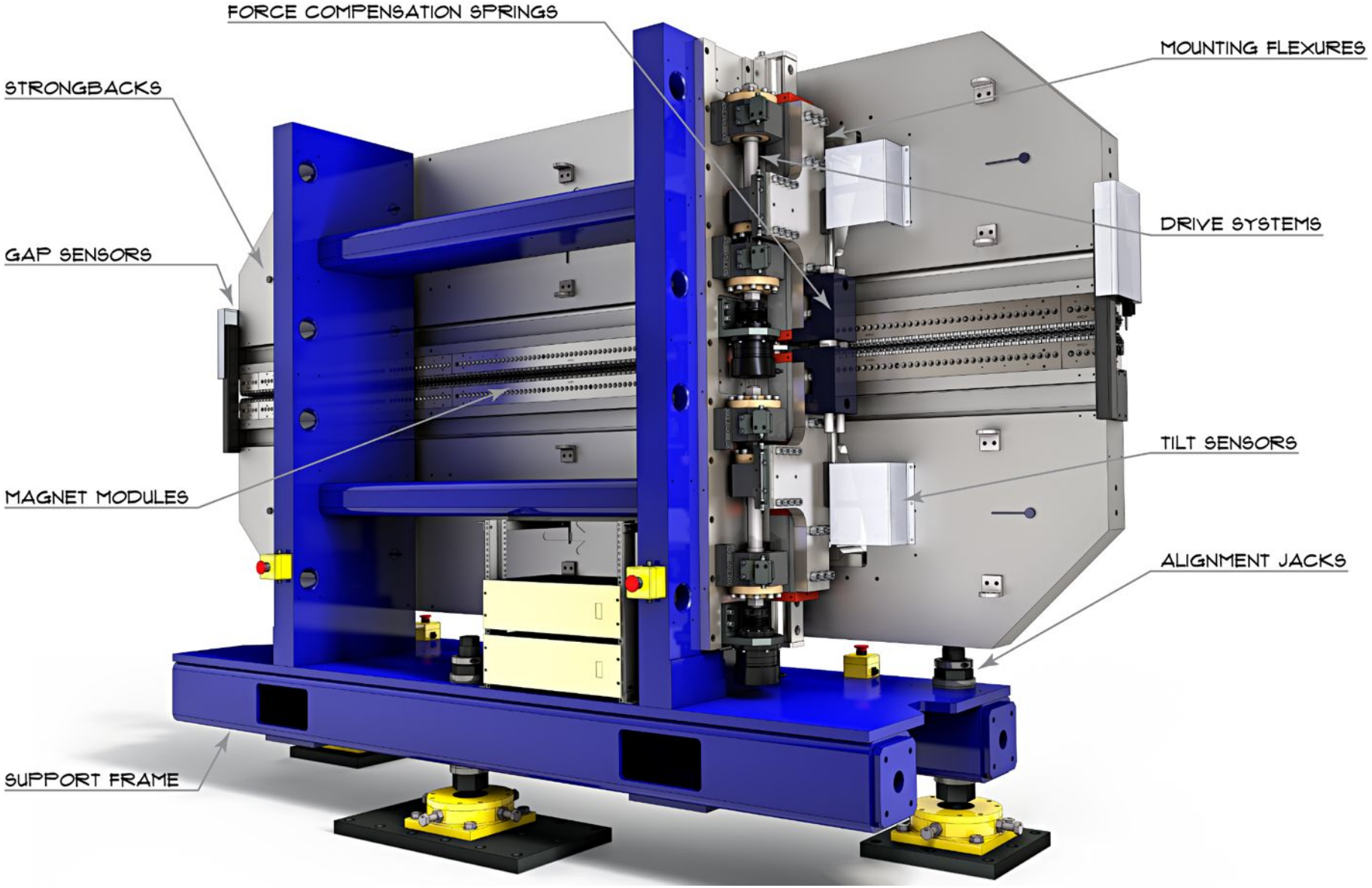
Evacuate to assembly area (usually in parking lot) when shaking stops. Take personal items.

Follow Directions from the Building Emergency Team.

Berkeley Lab Organization



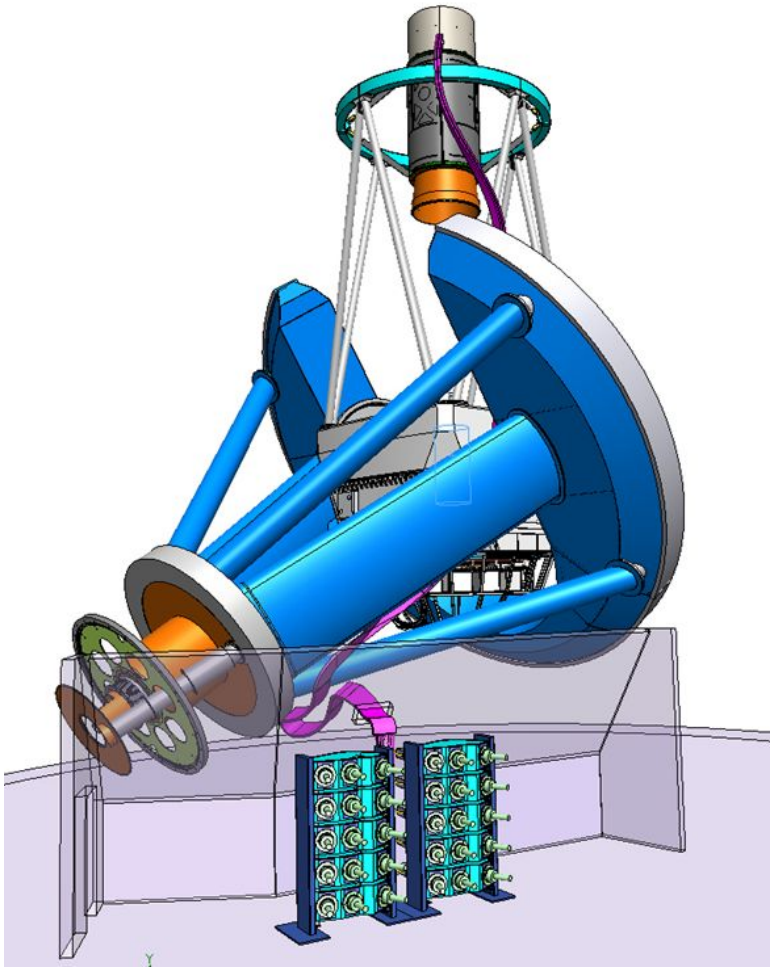
LCLS-II Undulator Design Is Finalized



The Dark Energy Spectroscopic Instrument

- DESI will measure the effect of dark energy on the expansion of the universe.
- It will obtain optical spectra for tens of millions of galaxies and quasars, constructing a 3-dimensional map spanning the nearby universe to 10 billion light years.
- DESI will be conducted on the Mayall 4-meter telescope at Kitt Peak National Observatory, Arizona starting in 2018.

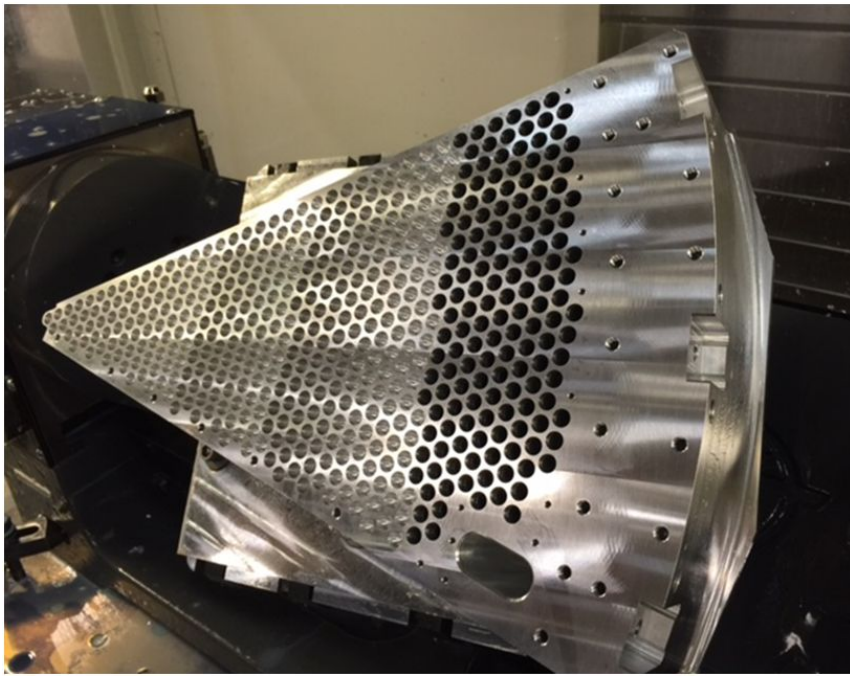
For details see desi.lbl.gov

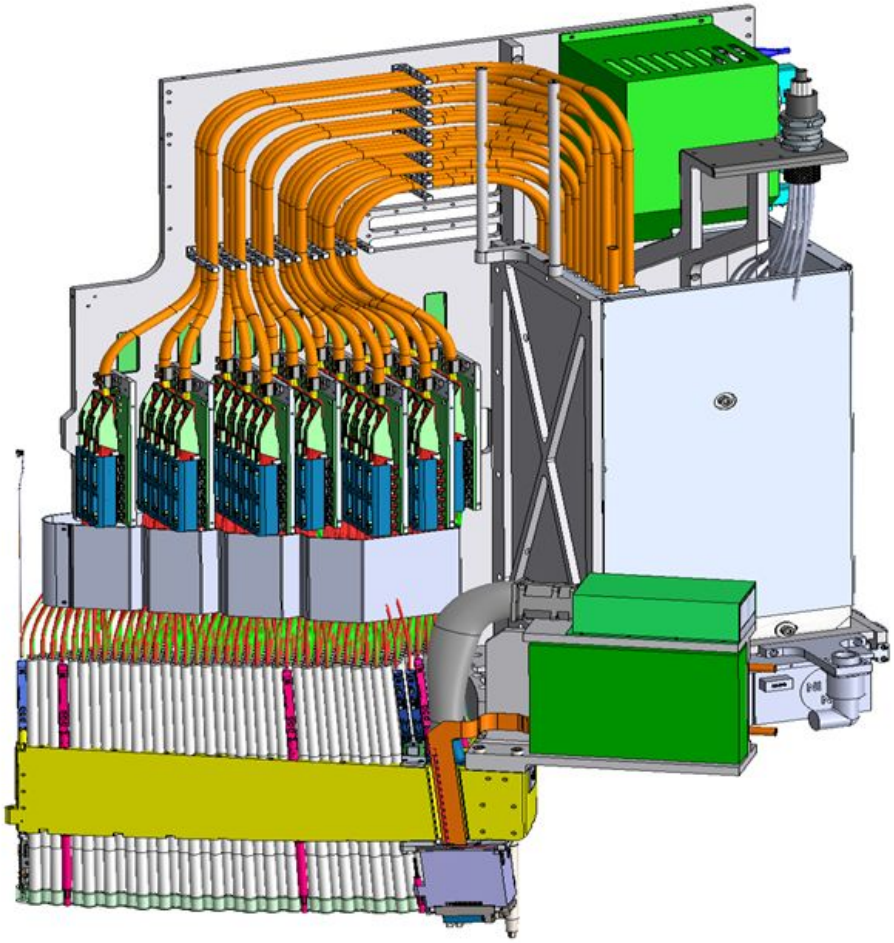


DESI focal plane

500 actuators per wedge

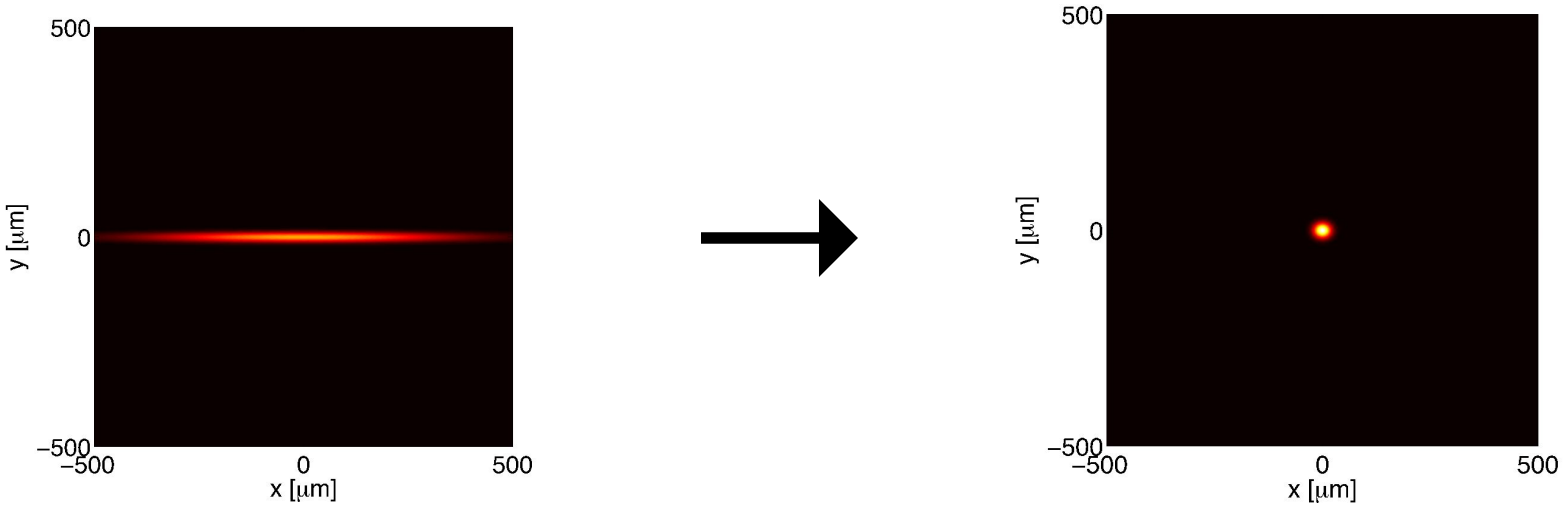
10 wedges





ALS-U: Develop highest brightness and most capable soft x-ray synchrotron facility

Up to 1000x increase in brightness by reducing source size and divergence

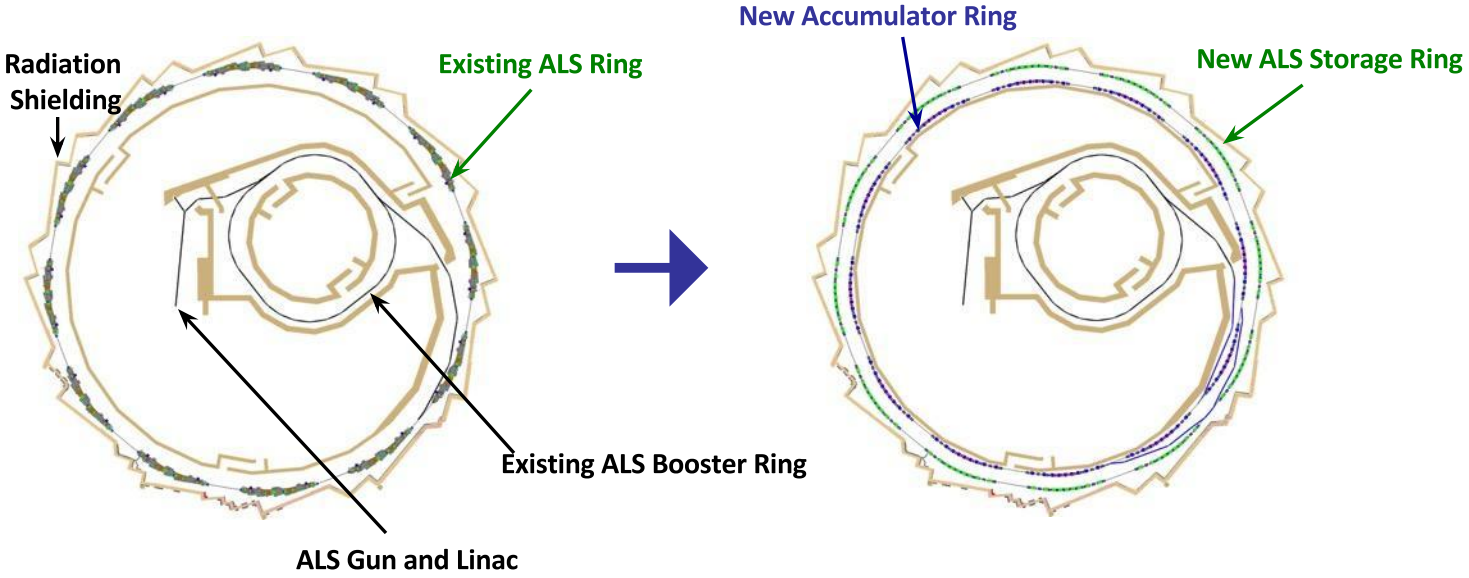


- **Advanced imaging techniques to address essential science and technology**
  - -Chemical, electronic, and magnetic maps of functional systems
  - -Nanometer resolution in 3-dimensions
  - -Dynamics and kinetics on natural timescales from picoseconds to minutes

- **Important challenge**
  - -Minimize dark time (one year or less)
  - -Most beamlines operational at end of project

Scope of ALS-U

- **Replace** storage ring with new high performance storage ring based on multi bend achromat: same straight section length, location, and symmetry as original storage ring
- **Add** full energy accumulator ring in existing storage ring tunnel
- **Modify** existing beamlines: optics upgrades and beamline relocation
- **Add** few world-class undulator beamlines optimized for science case
- **Upgrade** some conventional facilities



Cost effective solutions:

- Will reuse existing building, shielding, injector, and most beamlines
- Will have operational costs similar to ALS