

LILAr: Light Imaging w/ Liquid Argon

Long term goal: Develop multiple modality pixels capable of reading VUV scintillation light and femtoCoulomb charge: harvest the benefits of pixelated TPC and powerful light collection system. **Short term:** snowmass white paper

The project, aka the light side: Detection of scintillation light in liquid noble elements on wide surfaces using thin films of amorphous semiconductors and dopant cocktails for both visible and VUV light at cryogenic temperatures.

Status:

- In collaboration with UTA theorists: Developed a first simulation based on density functional theory for optical properties. First papers on their way.
- Successful vacuum tests on first prototypes (performed at UTA): we saw signal!
- FNAL Vacuum setup is close to be completed: ORC in preparation.
- Exploring options of A-Se deposition at the Lab: next step cryo stress tests.

Lab Support:

- Availability of technicians and time at machine shops is fundamental for small “high-risk high-reward” R&D projects. By nature, this work is seldom programmatic, but it is often limited in time. We need more flexibility in the resources we have and more resources in general if we want to keep small R&D alive and competitive with Universities.

