

LILAr: Light Imaging w/ Liquid Argon



Long term goal: Develop multiple modality pixels capable of reading VUV scintillation light and fetmoCoulmb charge:
harvest the benefits of pixelated TPC and powerful light collection system.

Short term goal: 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.
1st paper on the archive: 2104.14455
- Test from 293 - 77K with VUV light on first prototypes (at ORNL): **we saw signal!**
- 3rd prototype: 25 micron pitch on its way (achieve higher field)
- Ar purity test on its way

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.

