

Thin Films for HEP @ SCIPP

- Began working with Jessica/ANL in ~2022
 - \$50k of UCSC seed funding to develop test stand
 - Grew to involve several PI/postdoc/students at SCIPP
- Testing crystalline InP sensors designed by ANL/UCSC
 - Extending previous InP fabrication/studies from Jessica/Sungjoon (<https://arxiv.org/abs/2404.12497>)
 - Single-pad and multipad devices
 - Lab tests at SCIPP; X-ray test beam at Diamond & CLS
 - Results: <https://arxiv.org/abs/2405.18794>, another in paper progress
- DOE Detector R&D funding for “Thin Films for Charged Particle Detection”
 - April 2025 – March 2028, including UCSC (SCIPP & RIL), UHawaii
 - 5 track program:
 - Expanded characterization of crystalline InP devices
 - Fabrication of amorphous, thin-film InP sensors
 - Development of simulation tools for thin film tracking sensors
 - Studies of other thin-film materials
 - Final prototype with thin-film sensor and readout electronics

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- Current activities (not including Shiva/RIL's work):
 - Test stand development (Alibava for CCE)
 - Additional device characterization: surface currents/resistances
 - Charge collection/pulse formation modeling in irradiated sensors
 - Analysis of X-ray beam test data
 - TCAD simulation of crystalline InP devices
 - Pursuing fabrication of amorphous InP devices for comparison with crystalline InP