Shawn Shin

Los Angeles, CA
shawn.shin@ucla.edu

EDUCATION

Ph.D. in Medical Physics — Expected Spring 2029
University of California, Los Angeles

B.A. in Physics — May 2021
University of California, Berkeley

RESEARCH EXPERIENCE

Graduate Student Researcher — Aug 2024 – Present
UCLA Crump Institute For Molecular Imaging — Los Angeles, CA
Advisor: Prof. Arion Chatziioannou

- Leading Geant4 Monte Carlo simulations

Staff Research Associate — Sep 2023 – Jul 2024
UCLA Department of Radiological Sciences — Los Angeles, CA
Supervisor: Prof. Aichi Chien

- Optimized image-based analysis of 2-D Digital Subtraction Angiography images acquired from carotid stenosis phantom models to extract flow parameters (i.e. blood flow velocity, time-dependent pressure).

Associate Research Scientist — Jul 2021 – Feb 2023
Incom, Inc. — Charlton, MA
Supervisor: Dr. Alexey Lyashenko

- *Primary role*: Fabricate, seal, and characterize the world's largest planar Microchannel Plate Photomultiplier Tube (MCP-PMT), Large Area Picosecond Photodetector (LAPPD), in ultra-high vacuum chambers.
- Developed and deposited large area bialkali/multialkali photocathodes with high quantum efficiencies (>30%).
- Developed and fabricated Z-stack (3 MCPs) LAPPD for LHCb electromagnetic calorimeter (ECAL) timing layer as part of DOE SBIR Phase I project.
- Senior/Key Person for DOE SBIR Phase II project: Large Area Multi-Anode MCP-PMT for High Rate Application.

Summer Research Intern — May 2021 – Jul 2021
CERN — Meyrin, Switzerland
Supervisor: Prof. Joel Fajans

- On-site summer research as part of Antihydrogen Laser Physics Apparatus (ALPHA) collaboration at CERN.
- Optimized and improved LabVIEW program that automates Argon and Krypton gas-mixing in Third Harmonic Generation chamber to produce Lyman-α laser for doppler-cooling of antihydrogen atoms.
- Designed a structural support for superconducting octupole magnet current leads using Autodesk Inventor.

PUBLICATIONS

S. Shin et al., *Advances in the Large Area Picosecond Photo-Detector (LAPPD^{TM}): 8" × 8" MCP-PMT with Capacitively Coupled Readout.*, JINST **19** P06040 (2024).

SCIENTIFIC TALKS

Overview of the Large Area Picosecond Photodetector – LAPPD™
LAPPD Workshop – CFNS, Stony Brook University — October 2022

Production of Large Area Picosecond Photo-Detectors – LAPPD™: 2022 Status Update
ICHEP – Bologna, Italy — July 2022

Advances in Large Area Picosecond Photodetectors – LAPPD™
APS April Meeting – New York City, NY — April 2022

LAPPD Overview: Recent Performance Results of Gen-II (Capacitively Coupled) LAPPDs
LAPPD Workshop – CFNS, Stony Brook University — March 2022

INVITED TALKS

Large Area Picosecond Photo-Detector – LAPPD™: Ultrafast Next-Generation Photosensors
University of Massachusetts, Amherst – Department of Physics — August 2022

MENTORSHIP

Summer Internship Supervisor — Summer 2022
Incom, Inc. — Charlton, MA
Project: Automated Growth of Large Area Bialkali Photocathodes

- Supervised undergraduate summer intern on LabVIEW project that automates deposition of the LAPPD photocathode
- Taught hands-on laboratory techniques (vacuum systems, leak test, spot welding, substrate preparation, etc.)
- Performed automation trial and real-time debugging, demonstrating photocathode growth with occasional manual intervention

TEACHING

Undergraduate Group Tutor — Spring 2021
PHYS 111A: Instrumentation Laboratory — UC Berkeley

- Undergraduate student instructor for the upper division experimental course, PHYS 111A, taught by Prof. Joel Fajans and Prof. Kam-Biu Luk.
- Held weekly office hours that involved review of semiconductor circuit theory and debugging of students' circuits and LabVIEW codes.

OUTREACH

Nichols College — Fall 2021
MBA 745: LEAN Product Development — Dudley, MA

- Collaborated with Nichols College's MBA program to tackle Incom's internal supply-chain issue caused by COVID
- Devised and presented LEAN strategies to improve Incom's workplace efficiency

SKILLS

Programming Languages
Python, Java, SQL, R, C++, HTML, CSS

Tools
LabVIEW, LaTeX, Mathematica, SolidWorks,
GATE, Geant4, Autodesk Inventor, LTspice

Technology
Ultra-High Vacuum Systems, Class 10,000 Cleanroom, Photomultiplier Tubes,

High Voltage Equipment, Bialkali/Multialkali Antimonide Photocathode, Microchannel Plates, Computer Numerical Control