# TERRANCE SCHAUB

**EXPERIMENTAL SYSTEMS | VACUUM & CRYOGENICS | INTEGRATION & COMMISSIONING**

Fond du Lac, WI 54935 | 920-979-0856 | tschauby@gmail.com | Technical Portfolio: tjschaub.com

## PROFESSIONAL SUMMARY

Hands-on experimental systems professional with approximately 8 years of experience at Los Alamos National Laboratory, building, integrating, commissioning, troubleshooting, and operating complex research equipment. Experience spans cryogenic and high-vacuum systems, gas distribution, accelerator and beamline hardware, mechanical fabrication, instrumentation, PLC/HMI controls, and DAQ. Worked with physicists, engineers, and technical staff to bring first-of-a-kind systems from construction and installation through functional testing, operational readiness, and ongoing improvement.

## CORE TECHNICAL CAPABILITIES

**Commissioning & Operations: system/subsystem walkdowns; installation and readiness verification; startup, functional testing, troubleshooting, beam-readiness activities; experiment and facility operations**
**Systems: cryogenic LHe/LN2 distribution; helium liquefier support; high vacuum; deuterium and process gas; pneumatic/hydraulic systems; superconducting magnets; accelerator/beamline infrastructure**
**I&C / DAQ: PLCs, HMIs, analog/digital I/O, pressure/flow/temperature/level/vacuum instrumentation, control valves, DAQ, SQL databases, online monitoring, oscilloscopes and digitizers**
**Work Process Control: Integrated Work Documents (IWDs), procedures, hazard analyses, SME coordination, multidisciplinary walkdowns, work authorization, readiness verification, technical documentation**
**Field & Fabrication: mechanical/electrical assembly, troubleshooting, TIG welding, machining, soldering/wiring, cableways/electronics racks, crane and forklift operations, 3D printing/CAD prototyping**
**Software: Python, C++, SQL, ROOT, MATLAB, R, Plotly; Microsoft Office; Fusion 360**

## PROFESSIONAL EXPERIENCE

**Research Technologist** Jul 2023 - May 2026

Los Alamos National Laboratory | Nuclear & Particle Physics & Applications — Los Alamos, NM

- Served as a hands-on technical resource for the Ultracold Neutron (UCN) facility, supporting construction, integration, commissioning, operation, maintenance, and modification of neutron experiments and supporting cryogenic, vacuum, gas, mechanical, electrical, instrumentation, and control systems.
- Installed and supported liquid-helium and liquid-nitrogen distribution infrastructure serving experimental target systems and superconducting magnets; participated in helium-liquefier startup and maintenance and operated superconducting magnets.
- Developed PLC/HMI controls and instrumentation for cryogenic distribution, integrating remotely operated valves and pressure, flow, temperature, and level measurements; built an online database/monitoring system for helium storage and distribution.
- Built vacuum-pumping systems on primary neutron beamlines, installed deuterium-gas and facility gas/air infrastructure, and supported experimental users with utilities, cable routing, electronics racks, fabrication, rigging, and general integration.
- Participated in dismantling, repair, reinstallation, and recommissioning of approximately 50 ft of accelerator beamline approaching the neutron-production target; added thermocouples and other instrumentation and integrated data into control-room monitoring.
- Performed routine system and subsystem walkdowns during experimental integration and for facility systems under responsibility; participated in beam-readiness reviews supporting safe operational readiness at the start of accelerator beam cycles.
- Built and commissioned cryogenic plumbing and instrumentation for the Cavallo high-voltage multiplier apparatus, including LHe fill/exhaust and pressure, temperature, level, and vacuum instrumentation; served as cryogenic representative during commissioning and supported student contributors.
- Built and integrated major components of a neutron EDM experimental chamber, including electrodes, neutron valves, acrylic cells, hydraulic actuation, controls, and DAQ interfaces; installed the chamber on the neutron beamline, achieved high vacuum, and brought valve operation to data-taking readiness.
- Developed and began testing a beamline gate-valve control and monitoring system combining an analog operator panel with PLC monitoring/data acquisition, intended to improve vacuum management and constrain user operation to appropriate beamline sections.

**Electrical Infrastructure Assessor** Apr 2022 - Jul 2023

Kalvio Inc. (LANL Contractor) — Los Alamos, NM

- Assessed condition, functionality, and reliability of LANL electrical infrastructure through field inspections; managed and updated large engineering datasets and technical documentation supporting infrastructure planning and maintenance.

**Manager of Detector Construction and Installation** Aug 2020 - Dec 2021

Los Alamos National Laboratory | Applied and Fundamental Physics — Los Alamos, NM

- Led and supported multidisciplinary construction, integration, installation, testing, and commissioning of the CCM200 detector, a 10-ton liquid-argon scintillation detector with 200 photomultiplier tubes at the LANSCE Lujan Center.
- Coordinated detector assembly and field integration across mechanical structures, PMT hardware, high-voltage cabling/feedthroughs, cryogenic interfaces, instrumentation, DAQ, shielding, and lifting operations; worked with engineers to resolve fit, performance, and integration issues.
- Performed representative warm/cold hardware testing and prototyping prior to production and implementation, including PMT assemblies, HV/cabling components, cryogenic detector hardware, and calibration systems; supported troubleshooting and corrective changes through commissioning.
- Developed and supported detector/environmental monitoring and near-line analysis systems that made PMT rates, DAQ status, and environmental data available to experiment shift personnel.

**Post-Bachelor Researcher** Aug 2018 - Aug 2020

Los Alamos National Laboratory | Subatomic Physics — Los Alamos, NM

- Supported CCM detector construction, commissioning, beam operations, troubleshooting, calibration, and optimization for accelerator-produced dark-matter and sterile-neutrino research.
- Installed and calibrated liquid-argon level, temperature, pressure, and other environmental instrumentation; integrated signals into data systems and online monitoring used during detector operations.
- Developed and operated LED/laser and radioactive-source calibration systems; authored and supported Integrated Work Documents (IWDs), procedures, hazard analyses, SME reviews, multidisciplinary walkdowns, and approvals for cryogenic, high-voltage, Class 4 laser, and radioactive-source work.

## EARLIER EXPERIENCE

**Undergraduate Laboratory Intern, Los Alamos National Laboratory (2017, 2018) -** Machine-learning analysis of high-speed microparticle imaging; work contributed to a published study on unsupervised learning of 4D particle motion.
**Laboratory Assistant, St. John's College (2017-2018) -** Set up and maintained atomic-physics and microbiology laboratory equipment and supported students with experiments, theory, and data analysis.

## EDUCATION

**Graduate Coursework | University of New Mexico | 3 semesters**
**Coursework included algorithms, digital signal processing, machine learning, and AI for systems and controls.**
**Bachelor of Arts, History of Mathematics & Science | St. John's College, Santa Fe, NM | 2018**

## SELECTED RESEARCH & RECOGNITION

**LANL Distinguished Performance Award** - CCM200 team | **LANL Spot Awards (2)** - Ultracold Neutron program | **DOE SULI Internship Award** | **ARIEL Internship Award (2x)**. Co-author/contributor on peer-reviewed work involving Coherent CAPTAIN-Mills dark-matter/axion searches, ultracold-neutron detector and cryogenic high-voltage systems, and machine-learning analysis of high-speed imaging.