James W. Kingston
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EDUCATION

University of California, Davis Expected June 2026
- Physics, PhD
- GPA: 4.0

University of Chicago June 2019
- Physics, Masters
- GPA: 3.48

University of California, Berkeley December 2017
- Physics and Applied Mathematics, Bachelors
- GPA: 3.34

SKILLS

Operating Systems: UNIX/Linux (OS X, Ubuntu, Linux Mint, Red Hat), Windows
Programming Languages: C++, Python, MATLAB
Software: COMSOL, SolidWorks, ROOT, Microsoft Office Suite

PROFESSIONAL EXPERIENCE

Assistant Specialist, Pantic Group September 2019 – August 2020
Department of Physics, University of California, Davis, Davis CA 95616
- Worked in a team to build a mockup of the DarkSide-20k argon detector for high voltage studies.
- Exported a high voltage cable STP file to COMSOL and ran a parametric sweep of the conductivity of the semi-resistive layer.
- Electric field outside the cable was plotted against the conductivity to find the optimal resistance for minimizing the electric field.
- Successfully designed and built a 10’ crane frame to lift the cryostat flange for maintenance.
- Designed a lens and mount for a cryogenic camera which will monitor high voltage sparking inside the mockup.

Graduate Researcher, Grandi Group September 2018 – June 2019
Kavli Institute for Cosmological Physics, University of Chicago, Chicago IL 60615
- Operated and collected data with a dual-phase xenon TPC (time projection chamber) detector.
- Expanded on existing Geant4 simulations to include photon detection efficiency of photomultiplier tubes.
- Designed and implemented level meters inside the xenon detector for precision measurements of the gas-liquid interface.
- Analyzed data using techniques such as pulse-shape discrimination and event position-reconstruction.

- Isolated krypton-83 events within the detector and measured the half-life of both decays within 3% accuracy.

Research Assistant, Rare Event Detection Group June 2016 – August 2018
Lawrence Livermore National Laboratory, Livermore CA 94550

- Worked in a team of five to design and build a dual-phase xenon TPC detector.
- Built the framework of a slow control system for the xenon TPC.
- Made 3D potential and electric field simulations of the detector drift volume.
- Calibrated detector response to single photoelectrons and single electrons.
- Safely ramped the detector's extraction field to 10.4 kV/cm, the highest ever achieved in a dual-phase xenon detector.
- Shipped detector to Triangle Universities Nuclear Laboratory to study low energy nuclear recoils from a neutron beam. Ionization yield of .3 keV nuclear recoils was measured for the first time.

Undergraduate Researcher, CMS Group July 2017 – September 2017
Deutsches Elektronen-Synchrotron (DESY), Hamburg Germany 22607

- Added commands to a program that sent instructions to and read data from a new pixel readout chip.
- Wrote code to send a calibration pulse to the readout chip and draw the resulting signal pulse shape.
- Characterized the pixel chip by determining the dependence of features of the pulse shape (amplitude, peaking time) on various parameters of the chip that could be modified by the user.
- Optimized the chip for usage in the DESY electron test beam.

PUBLICATIONS

1. J. Xu, S. Pereverzev, B. Lenardo, **J. Kingston**, D. Naim, A. Bernstein, K. Kazkaz, M. Tripathi, "Electron extraction efficiency study for dual-phase xenon dark matter experiments", Phys. Rev. D 99, 103024 (Published May 2019)

2. B. G. Lenardo, J. Xu, S. Pereverzev, O. A. Akindele, D. Naim, **J. Kingston**, A. Bernstein, K. Kazkaz, M. Tripathi, C. Awe, L. Li, J. Runge, S. Hedges, P. An, and P. S. Barbeau, "Low-energy physics reach of xenon detectors for nuclear-recoil-based dark matter and neutrino experiments", Phys. Rev. Lett. 123, 231106 (Published December 2019)

PRESENTATIONS

1. "Calibration of a Dual-Phase Xenon Detector", Nuclear Science and Security Consortium Review (June 2018)

AWARDS

1. Nuclear Science and Security Consortium Undergraduate Fellowship (2016-2017)