

Cal Poly Plans for EIC

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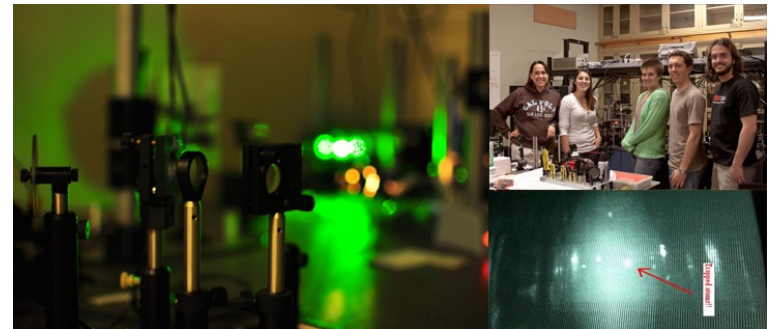
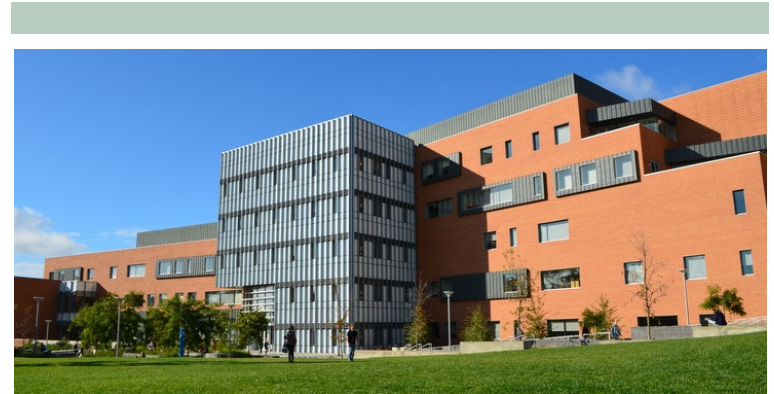


CAL POLY

Our Department

Predominantly Undergraduate Institution

- 200 Majors, 30 TT Faculty, 10 Full-time Lecturers
- “Learn by Doing” approach to teaching
- No TAs, faculty teach all classes
- Research with undergraduates is core to our mission
- Incoming Chair 2022: J. Klay
- Tenure-track hire for “Experimental Physicist” in 2022-23
- Transitioning to semesters in 2026



Nuclear Group at Cal Poly

- Fifteen years of funding from NSF, DOE-NE, LLNL/LANL (\$2.8M)
- 71 undergraduate research students
 - 26 senior projects, 26 external presentations
- Detector development, simulations, software, data analysis, computational physics
- State-of-the-art lab space, machine shop
 - William and Linda Frost Center for Research and Innovation (opening 2022)



Group at ALICE, 2010

NIFFTE

Neutron Induced Fission Fragment Tracking Experiment

- LANSCE Experiment (2008-2023)
 - Funded through DOE-NE, direct contracts to LANL/LLNL (\$1.4M to Cal Poly)
 - Eight publications, four in preparation
 - J. Klay Executive Council Chair (2009-present)
 - Ramping down by end of FY23
- Student involvement:
 - 19 undergrads, 5 senior projects
 - Data collection and experiment monitoring (remote)
 - Simulations and data analysis of ternary fission

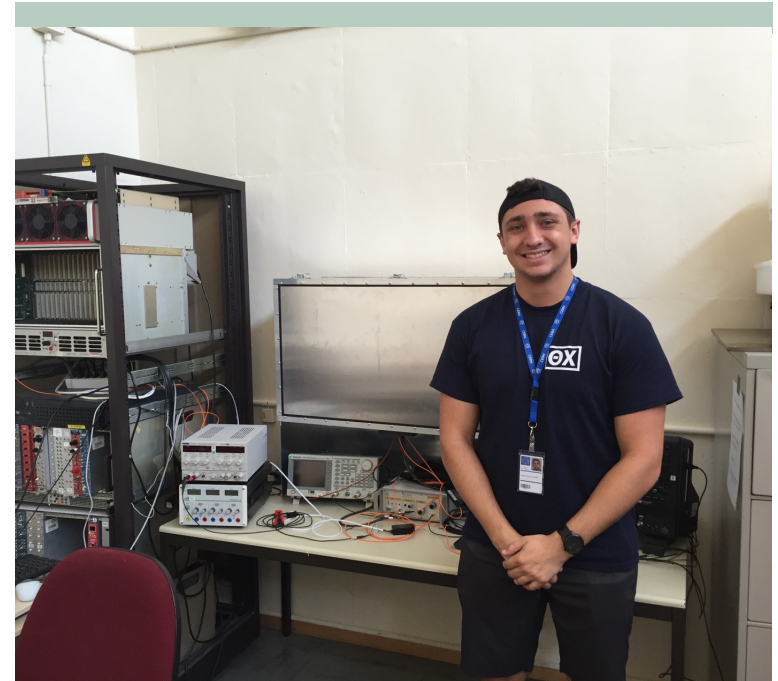


D. Duke, 2011

ALICE

Heavy Quark Jets and Fast Interaction Trigger Detector

- RUI grants from NSF to explore heavy quark energy loss (\$871k, 2007-2016)
- MRI and RUI grants from NSF to help build, test, commission, operate FT0 in Run 3 (\$571k, 2016-2023)
- Student involvement:
 - 32 undergrads, 22 to CERN, 16 senior projects
- Research infrastructure:
 - ps blue laser, Photonis MCP-PMT test stand, Wiener HV module, CAEN desktop digitizer, fast scopes, 5 tons of low-background lead bricks, other equipment available on loan from department

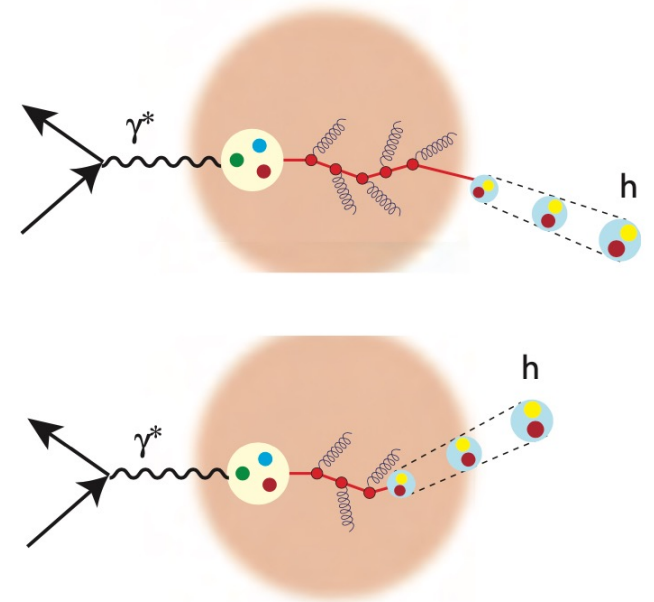


A. Guard, 2018

EIC Research Interests

Jets and Detector Development (Triggering)

- Expertise in software, simulations
 - Detector specifications (geometry)
 - Secondary particle production (analysis)
- Experience with detector component testing, development
- Physics Focus: jet physics in e-p, e-A collisions
 - Jets as a probe of nuclear structure, high density gluon matter
 - Heavy quark jet identification, dead-cone effect



What / When?

Cal Poly (J. Klay) plans

- Collaborate with UC-EIC/California Consortium
 - Undergraduate student research (Summer and AY)
- New Lab space in Frost Center online in 2022
 - Detector testing, development opportunities
- NSF grant request in 2023:
 - Wind down ALICE involvement with end of Run 3
 - Ramp up EIC involvement for software, simulations, detector testing (as appropriate)

