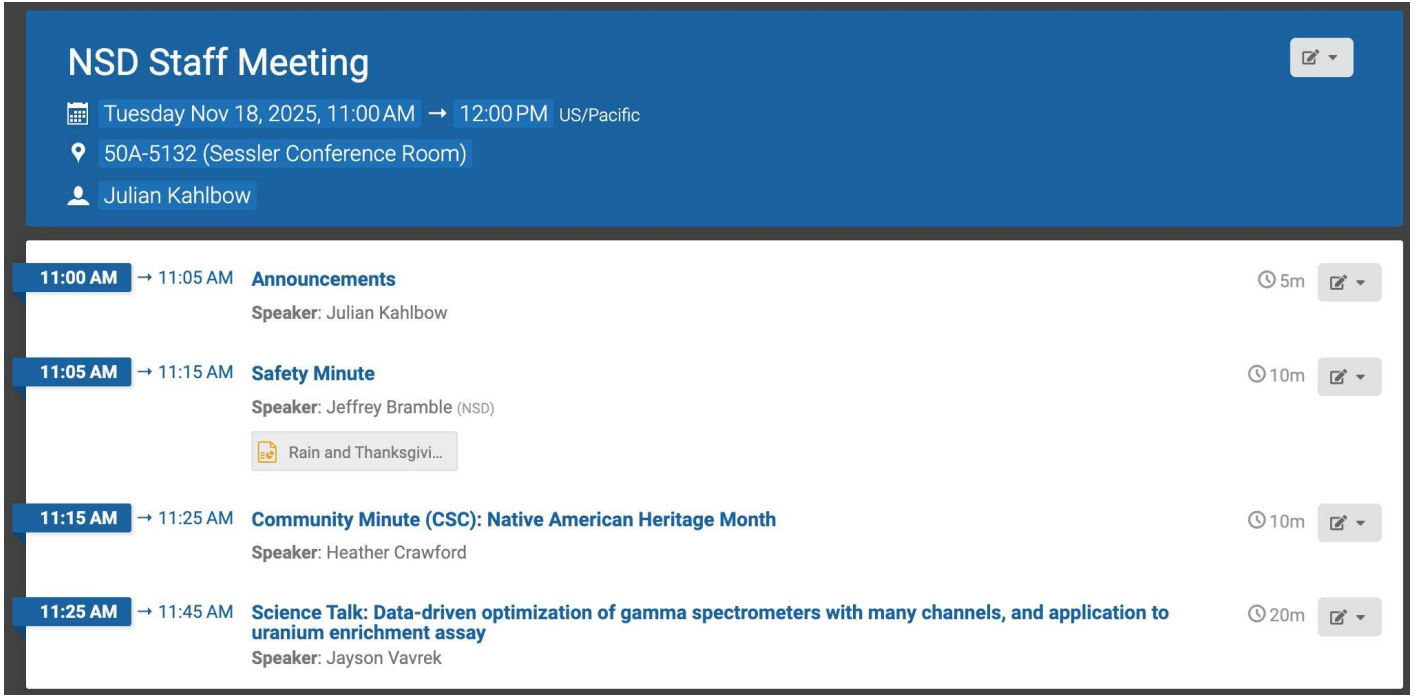
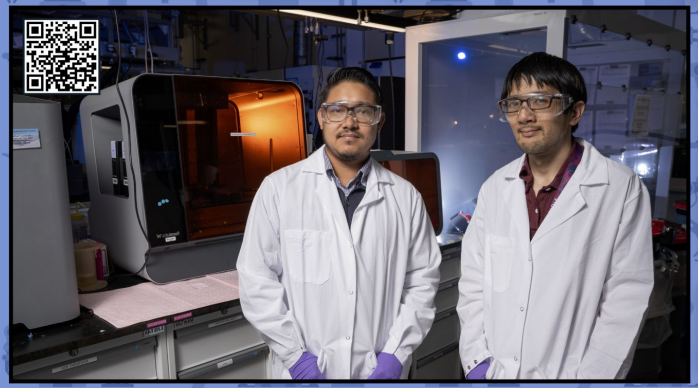


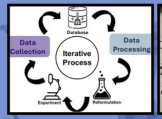
\+ **Coffee, Tea, Cookies at NSD Office Suite with Speakers**

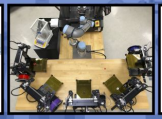
Interdisciplinary Instrumentation Colloquium 19th Nov 12pm

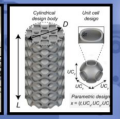
B50 Auditorium

BERKELEY LAB









Self-driving Labs

enabling autonomy in experimental science

Dr Aldair Gongora

Despite advances in instrumentation and data analysis, the act of performing physical experiments remains time-consuming and resource-intensive, ultimately limiting the pace of exploration and innovation.

The emerging field of **self-driving laboratories** (SDLs) and autonomous labs seeks to overcome these challenges by **integrating robotics, automated experimentation, and artificial intelligence (AI)** to design and execute experiments with minimal human intervention. Through this integration, SDLs are redefining how research is conducted across scientific domains, enabling a **more adaptive, data-driven, and efficient** approach to scientific discovery.

Aldair Gongora is a staff scientist at Lawrence Livermore National Laboratory (LLNL) and deputy director for LLNL's Data Science Institute's Consulting Service. His research centers on accelerating scientific discovery by developing next-generation research platforms and capabilities, such as self-driving labs and autonomous robots for science. Aldair earned a B.S. in Mechanical Engineering from Rockhurst University and a Master's and Ph.D. in Mechanical Engineering from Boston University, where he conducted research on self-driving labs and autonomous experimentation for mechanical design.

HIT Seminar

Date:	Tue, Nov 18, 4 pm
Room:	Room 328, Birge Hall, UC Berkeley Campus
Speaker:	Kaori Fuyuto (KEK, Tsukuba)
Title:	Searching for muon to electron conversion

Date:	Tue, Nov 25, 4 pm
Room:	Swiatecki Lounge B70 annex - 228
Speaker:	Dr. Raza Sabbir Sufian (New Mexico State U.)
Title:	Toward Calculating Gluon GPDs and the Hadronic Structure of the Photon from Lattice QCD

Research Progress Meetings (RPM)

Date:	Thu, Nov 20, 4 pm
Room:	Sessler
Speaker:	Xiaochen Ni (University of Washington)
Title:	Development of TopmetalSe: CMOS/aSe Hybrid Detectors for Neutrino Physics

NSD Coffee Hour: Tue, Nov 25, 11:00am - 12:30pm, NSD Office (Bldg. 50-4037)

Next Upcoming Colloquium

Tues. 9 December, 2025, Ben Kay, ANL

Zoom: https://lbnl.zoom.us/j/96859297759?pwd=4N9U93rRvOaZNwkzdaMX3TCe8MqwMj.1

(ID: 968 5929 7759, Passcode: NSDTalk)

A universal fate for spin-orbit partners in the weak-binding regime?

A growing body of experimental data on effective single-particle energies in weakly bound systems has materialized over the past decade or so. The most illuminating of these data has been for the neutron-rich nuclei around N = 20 and 28, where both members of the 2p can be observed. Their separation, ΔSO, appears to decrease as the least bound of them approaches zero binding. This decrease is at odds with the well-established trends of measured spin-orbit splittings across the chart of nuclides for well-bound states as established by Mairle [Phys. Lett. B 304, 39 (1993)]. In comparing ΔSO from recent experimental data, mean-field descriptions, and the trends established by Mairle for both well-bound and weakly bound systems across the nuclear chart, a seemingly universal behavior emerges that could prove predictive. We focus on neutron spin-orbit partners in this work. Many of the regions explored have connections to other prominent topics in nuclear physics, such as r-process nucleosynthesis, where the ordering of single-particle energies near threshold in weakly bound systems plays a role in reaction rates. Throughout, I will highlight key results that have benefited from one of the principal methods used to extract such data: the solenoidal spectrometer technique, now used at ATLAS, ISOLDE, and FRIB. This material is based upon work supported by the U.S. Department of Energy, Office of Science, Office of Nuclear Physics, under Contract Number DE-AC02-06CH11357.

Social Media is Back!!!

155 758 49

Follow Us!!

We Want to Post Your . . .

- Cool pictures
- Cool videos
- Publications
- big news
- Awards
- highlights

NSDsocialmedia@lbl.gov

Attention:
Students and Postdocs!!!

#FutureOfNuclear video series

<60 s video

how you research is advancing nuclear science?