

# The 17<sup>th</sup> International Workshop on Tau Lepton Physics

University of Louisville  
Louisville, Kentucky, USA

**T** December 4-8  
**2023**

## Scientific program:

Properties of  $\tau$  leptons  
 $\tau$  production at lepton and hadron colliders  
Precision electroweak physics  
CP Violation and flavor mixing  
Neutrino physics

Lepton universality and flavor violation  
Decays involving  $\tau$  leptons  
Hadronic  $\tau$  decays and QCD  
Electric and magnetic dipole moments  
Future opportunities in  $\tau$  physics

**Website: <http://indico.cern.ch/e/TAU2023>**

### Local organizing committee:

Swagato Banerjee (University of Louisville) - Chair  
Emilie Passemar (Indiana University) - Vice-Chair  
Jon Urheim (Indiana University) - Vice-chair  
David N. Brown (Western Kentucky University)  
Chris L. Davis (University of Louisville)

### International advisory committee:

Michel Davier (LAL, Orsay, France)  
Denis A. Epifanov (BINP & Novosibirsk State University, Russia)  
Cristina Galea (Radboud University, The Netherlands)  
Kenji Inami (Nagoya University, Japan)  
Toru Iijima (Nagoya University, Japan)  
Alberto Lusiani (Scuola Normale Superiore & INFN Pisa, Italy)  
Yuri Kudenko (INR, Moscow, Russia)  
William Marciano (BNL, USA)  
Klaus Mönig (DESY, Hamburg & Zeuthen, Germany)  
Vittorio Paolone (University of Pittsburgh, USA)  
Antonio Pich (IFIC, University of Valencia -- CSIC, Spain)  
Lee Roberts (Boston University, USA)  
Michael Roney (University of Victoria, Canada)  
Achim Stahl (RWTH Aachen University, Germany)  
Zbigniew Was (Institute of Nuclear Physics PAN, Krakow & CERN PH-TH)  
Liangliang Wang (IHEP, China)  
Changzheng Yuan (IHEP, China)  
Zhiqing Zhang (LAL, Orsay, France)

UNIVERSITY OF  
**LOUISVILLE**  
Department of Physics & Astronomy

**U** COLLEGE OF  
ARTS & SCIENCES

**U** Office of Research  
and Innovation

UNIVERSITY of LOUISVILLE



# Welcome to Tau2023 at University of Louisville





Bus schedule to come from the Galt House in the morning  
<https://indico.cern.ch/event/1303630/page/30190-accommodation>

6 minute walk to W Market @ S 5th	<a href="#">Link to Google Map</a>	<a href="#">Link to Google Map</a>	<a href="#">Link to Google Map</a>
Bus 28 to Floyd Street Garage	8:01	8:16	8:31
Arrival at Student Activity Center [East entrance]	8:20	8:35	8:50

Bus schedule to come from the Hilton Garden Inn in the morning  
<https://indico.cern.ch/event/1303630/page/30190-accommodation>

2-minute walk to Crittenden @ Cracker Barrel	<a href="#">Link to Google Map</a>	<a href="#">Link to Google Map</a>
Bus 2 to Eastern Parkway @ Speed School	7:42	8:17
Arrival at Natural Science Building	7:47	8:22
10-minute walk to Student Activity Center [West entrance]	7:57	8:32



For those coming by bus 2, please look for yards signs to the SAC entrances

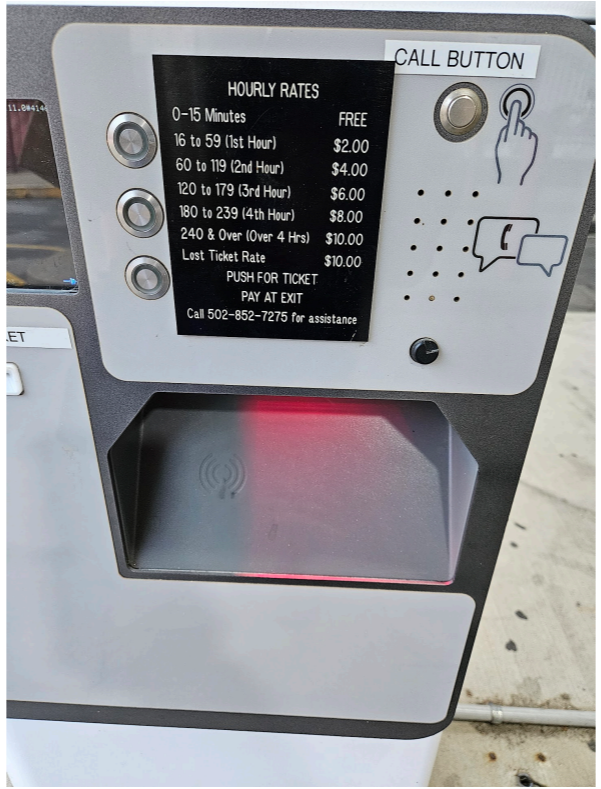




Entrance from bus 28 is at the East entrance to the SAC, adjacent to the Floyd Street Garage.



Visitor parking at Floyd Street Garage





## Plenary presentations will be held in Floyd Theater



Late registrations will be held in Floyd Theater [Courtesy: Dr. Sourav Patra]





Lunch and coffee breaks will be held in the Multipurpose Ballroom





Wednesday's social event and dinner banquet will be at the View Pointe Hall in the Ali Center





For internet connectivity, please see <https://louisville.edu/its/wireless/wireless>



### **Eduroam**

is the preferred UofL wireless network for students, faculty and staff based on the most secure encryption and authentication standards available. Our eduroam wireless service provides secure access for users on campus from other participating institutions that also utilize eduroam. Logging-in to verify your UofL credentials to initially set up the service is required. Use our ITS **on-boarding tool** to begin. See **details** for more information on this wireless network and extending your account for wireless access at other participating universities and institutions. A **configuration guide** for specific devices is also available for assistance.



### **ULvisitor**

allows for open, short-term use. With no sign-in required, this connection is primarily for UofL's visitors and guests who need wireless access. WiFi sessions on ULvisitor are limited to 6 hours on HTTP and HTTPS sites and sessions automatically log out after 30 minutes of inactivity.



Compact view of the timetable is at :  
<https://indico.cern.ch/event/1303630/timetable/?view=nicecompact>

Day	Time	Event
4 Dec 2023	09:00	Welcome - Dayna R. Touron (University of Louisville) (until 09:05)
4 Dec 2023	09:05	Monday - Swagato Banerjee (University of Louisville) (until 09:15)
4 Dec 2023	09:05	Announcements - Swagato Banerjee (University of Louisville)
4 Dec 2023	09:15	Monday morning - Michael Roney (until 09:55)
4 Dec 2023	09:15	Overview of Tau Physics - Kiyoshi Hayasaka (Niigata University)
4 Dec 2023	09:55	--- Coffee break ---
4 Dec 2023	10:25	Monte Carlo for tau lepton Standard Model and New Physics signatures - Zbigniew Andrzej Was (Polish Academy of Sciences)
4 Dec 2023	10:50	Flavor-changing neutral currents in tau decays - Alexey Petrov (University of South Carolina)
4 Dec 2023	11:15	Charged Lepton Flavor Violation in Heavy Particle Decays - Wolfgang Altmannshofer (UC Santa Cruz)
4 Dec 2023	11:40	Charged lepton flavor violation at circular e+e- colliders - Pankaj Munbodh (University of California Santa Cruz)
4 Dec 2023	12:05	What if cLFV was only detectable in tau decays? - Dr Innes Bigaran (Fermilab and Northwestern University)
4 Dec 2023	12:30	--- Lunch ---
4 Dec 2023	13:30	Monday after lunch - Gianluca Inguglia (until 15:30)
4 Dec 2023	13:30	Electromagnetic corrections in hadronic tau decays - Alejandro Miranda (IFAE)
4 Dec 2023	13:50	Measurements of Michel parameters and tests of lepton universality in tau-lepton decays at Belle and Belle II - Paul Feichtinger (Austrian Academy of Sciences)
4 Dec 2023	14:10	Precise measurement of the tau-lepton mass at Belle II - Radek Ziebek (Deutsches Elektronen-Synchrotron)
4 Dec 2023	14:30	Searching for Heavy Neutral Leptons using tau decays at BABAR - Sophie Middleton (Caltech)
4 Dec 2023	14:50	Heavy neutral leptons and beyond at the electron-ion collider - Keping Xie (University of Pittsburgh)
4 Dec 2023	15:10	Searches for lepton flavor violation in meson decays at Belle - Sourav Patra (University of Louisville affiliated to KEK)
4 Dec 2023	15:30	--- Coffee break ---
4 Dec 2023	16:00	Monday afternoon - Alexey Petrov (University of South Carolina) (until 18:00)
4 Dec 2023	16:00	Probing $\tau$ flavour change with $e^+e^-$ observables - Marco Ardu (Univ. Valencia and CNRS, LUPM)
4 Dec 2023	16:20	The Mu2e Experiment - Sophie Middleton (Caltech)
4 Dec 2023	16:40	A data-driven method to estimate the antiproton background in Mu2e - Namitha Chithirasamadam (University of Pisa)
4 Dec 2023	17:00	Mu2e-II Experiment - Meta Yucek (Fermilab)
4 Dec 2023	17:20	LHCb measurements on semileptonic decays of b-hadrons - Anna Lupato (Università di Padova & INFN)
4 Dec 2023	17:40	Lepton Flavour Universality tests using semileptonic b-hadron decays - Amau Brossa Gonzalo (Universidade de Santiago de Compostela)
5 Dec 2023	09:00	Tuesday (until 09:05)
5 Dec 2023	09:00	Announcements - Swagato Banerjee (University of Louisville)
5 Dec 2023	09:05	Tuesday morning - Alberto Lusiani (Scuola Normale Superiore and INFN, sezione di Pisa) (until 10:20)
5 Dec 2023	09:05	Measurement of the Muon Magnetic anomaly to 0.20 ppm by the Muon g-2 experiment at Fermilab - Lorenzo Cotrozzi
5 Dec 2023	09:30	Measurement of muon g-2 and EDM at J-PARC - Tsutomu Mibe
5 Dec 2023	09:55	An alternative evaluation of the leading-order hadronic contribution to the muon g-2 with MUonE - Riccardo Filoto (University of Liverpool)
5 Dec 2023	10:20	--- Coffee break ---
5 Dec 2023	10:50	Tuesday before lunch - David Hillin (until 12:30)
5 Dec 2023	10:50	Data-driven determinations of light-quark-connected and strange-plus-disconnected window contributions to $a_{\mu}$ - Kim Maltman
5 Dec 2023	11:15	Tau Data-Based Evaluation of hadronic vacuum polarization contribution to muon g-2 - Pablo Roig Garcia
5 Dec 2023	11:40	Magnetic and Electric Tau Dipole Moments Revisited - Prof Gabriel González-Sprinberg (Faculty of Sciences-Uruguay)
5 Dec 2023	12:05	Status and prospects of measuring Electric Dipole Moment of tau lepton - Kenji Inami
5 Dec 2023	12:30	Photo session (until 12:50)
5 Dec 2023	12:50	--- Lunch ---
5 Dec 2023	13:50	Tuesday after lunch - David Norri Brown (Western Kentucky University) (until 15:30)
5 Dec 2023	13:50	Leptophilic Dark Portals - Bhupal Dev (Washington University in St. Louis)
5 Dec 2023	14:10	Neutrino Portals to the Dark Sector - Douglas Tucker (TRIUMF and Simon Fraser University)
5 Dec 2023	14:30	Lepton flavor violation with tau leptons - Julian Heck
5 Dec 2023	14:50	Tau-LFUV Tests at Future Lepton Colliders - LINGFENG LI (Brown U.)
5 Dec 2023	15:10	Status and Prospects of SNO+ Experiment - Ziping Ye
5 Dec 2023	15:30	--- Coffee break ---
5 Dec 2023	16:00	Tuesday afternoon - Prof. Kiyoshi Hayasaka (Niigata University) (until 18:00)
5 Dec 2023	16:00	Searches for lepton flavor violation in tau-lepton decays at Belle and Belle II - Alberto Marini (DESY)
5 Dec 2023	16:20	Charged Lepton Flavor Violation at the EIC - Sonny Mantry (University of North Georgia)
5 Dec 2023	16:40	Dark sector searches with tau-pair events at Belle and Belle II - Sourav Dey (KEK)
5 Dec 2023	17:00	Search for Baryogenesis and Dark Matter in B-meson decays at BABAR - David Norri Brown (Western Kentucky University)
5 Dec 2023	17:20	Measurement of the tau lepton polarisation in Z boson decays by CMS detector - Abdollah Mohammadi (University of Wisconsin Madison)
5 Dec 2023	17:40	Measurement of beam polarization at an $e^+e^-$ B-Factory with a new tau polarimetry technique - Caleb Millor
6 Dec 2023	09:00	Wednesday (until 09:05)
6 Dec 2023	09:00	Announcements - Swagato Banerjee (University of Louisville)
6 Dec 2023	09:05	Wednesday morning - Jon Erik Urheim (Indiana University) (until 10:20)
6 Dec 2023	09:05	Tracking Down the Origin of Neutrino Mass - Julia Gehrmann
6 Dec 2023	09:30	Neutrino & Dark Matter Connections - Kevin James Kelly (Texas A&M University)
6 Dec 2023	09:55	New Physics in Neutrino Oscillations - Adam Jude Aurisano (University of Cincinnati)
6 Dec 2023	10:20	--- Coffee break ---
6 Dec 2023	10:50	Wednesday before lunch - Zbigniew Andrzej Was (Polish Academy of Sciences) (until 12:30)
6 Dec 2023	10:50	The Euclidean Adler function and its interplay with low-energy data and $\alpha_s$ - Antonio Rodriguez Sanchez
6 Dec 2023	11:10	New Physics in Hadronic Tau Decays - David Diaz Calderin
6 Dec 2023	11:30	Renormalon subtraction in hadronic tau decays - Di Hiromasa Takaura
6 Dec 2023	11:50	Update on $\alpha_s$ from hadronic tau decays - Maarten Golterman
6 Dec 2023	12:10	Difference between fixed-order and contour-improved perturbation theory - Santi Peris
6 Dec 2023	12:30	--- Lunch ---
6 Dec 2023	13:30	Wednesday after lunch - Soeren Andre Prell (Iowa State University) (until 15:30)
6 Dec 2023	13:30	Searches for New Physics that couple with third generation fermions - Valeria D'Amante (Universita & INFN Pisa)
6 Dec 2023	13:50	Search for LFV with tau leptons in the final state - Luca Guzzi (Universita & INFN, Milano-Bicocca)
6 Dec 2023	14:10	Measurements of Higgs boson properties in decays to two tau leptons and search for lepton-flavor-violating Higgs boson decays into tau leptons using the ATLAS detector - Oguel Oncol (Albert Ludwigs Universität Freiburg)
6 Dec 2023	14:30	Searches for new phenomena in final states with taus using the ATLAS detector - Giuseppe Carratta (University and INFN, Bologna)
6 Dec 2023	14:50	Measurement of the tau-lepton pair production from photons and tau g-2 - Quentin Buxit (University of Washington)
6 Dec 2023	15:10	Measurement of the anomalous magnetic moment in ultraperipheral collisions with ALICE at the LHC - Paul Alois Bühler (Stefan Meyer Institute for Subatomic Physics (SMI), Austrian Academy of Sciences)
6 Dec 2023	15:30	--- Social event and banquet ---
7 Dec 2023	09:00	Thursday (until 09:05)
7 Dec 2023	09:00	Announcements - Swagato Banerjee (University of Louisville)
7 Dec 2023	09:05	Thursday morning - Jon Erik Urheim (Indiana University) (until 10:20)
7 Dec 2023	09:05	Accelerator Search for Dark Matter - David Hillin
7 Dec 2023	09:30	Neutrino-nuclear interactions, beyond standard-model physics, and accelerator-produced dark matter - Daniel Salvat (Indiana University)
7 Dec 2023	09:55	Searches for Neutrinoless Double Beta Decay - Walter Pettus (Indiana University)
7 Dec 2023	10:20	--- Coffee break ---
7 Dec 2023	10:50	Thursday before lunch - Prof. Jianming Bian (University of California Irvine) (until 12:30)
7 Dec 2023	10:50	The Deep Underground Neutrino Experiment - Martin Tzanov (Louisiana State University)
7 Dec 2023	11:15	Latest results from the MicroBooNE experiment - Tanaz Mohayari (Indiana University)
7 Dec 2023	11:40	Status and Prospects of the JUNO Experiment - Mr Matthias Raphael Stock (Technische Universität München)
7 Dec 2023	12:05	Current Status and Future Prospects of the ICARUS Experiment - Justin Mueller
7 Dec 2023	12:30	--- Lunch ---
7 Dec 2023	13:30	Thursday after lunch - Alexander Friedland (until 15:30)
7 Dec 2023	13:30	Neutrino Mixing Parameters - Shirley Li (UC Irvine)
7 Dec 2023	13:50	Anomalous Tau Neutrino Appearance from Light Mediators in Short-Baseline Neutrino Experiments - Prof. Bhaskar Dutta
7 Dec 2023	14:10	Matter effects in the muon to tau neutrino probability ( $P_{\mu\tau}$ ) at long baselines - Srubabati Goswami (Northwestern University)
7 Dec 2023	14:30	Tau Polarization and Correlated Decays in Neutrino Experiments - Joshua Isaacson
7 Dec 2023	14:50	Non-standard and secret neutrino interactions at future tau neutrino experiments - Prof. Seodong Shin (Jeonbuk National University)
7 Dec 2023	15:10	TAMBO: Searching for Tau Neutrinos in the Peruvian Andes - Will Thompson (Harvard University)
7 Dec 2023	15:30	--- Coffee break ---
7 Dec 2023	16:00	Thursday afternoon - Martin Mihaylov Tzanov (Louisiana State University) (until 18:00)
7 Dec 2023	16:00	NOvA Status and Prospects - Teresa Lackey (Fermilab)
7 Dec 2023	16:20	The Hyper-Kamiokande Experiment: Status and Prospect - Dr Umak Kose (ETH Zurich)
7 Dec 2023	16:40	The Pacific Ocean Neutrino Experiment (P-ONE) - Andreas Gaerber
7 Dec 2023	17:00	The sensitivity and discovery potential of nEXO - Prof. Ryan MacLellan (University of Kentucky)
7 Dec 2023	17:20	The FLARE Experiment for High Energy Neutrino and Dark Matter Searches at LHC - Prof. Jianming Bian (University of California Irvine)
7 Dec 2023	17:40	3D-Reconstruction of Tau Neutrinos in LArTPC Detectors - Barbara Yaggy Alvarez
8 Dec 2023	09:00	Friday (until 09:05)
8 Dec 2023	09:00	Announcements - Swagato Banerjee (University of Louisville)
8 Dec 2023	09:05	Friday morning - Zbigniew Andrzej Was (Polish Academy of Sciences) (until 10:20)
8 Dec 2023	09:05	Neutrinos in modern astrophysics and cosmology - Alexander Friedland
8 Dec 2023	09:30	Tau Neutrinos with IceCube - Douglas Cowen
8 Dec 2023	09:55	Chiral Belle: e- Beam Polarization Upgrade of SuperKEKB - Michael Roney
8 Dec 2023	10:20	--- Coffee break ---
8 Dec 2023	10:50	Friday before lunch - Pablo Roig (until 12:30)
8 Dec 2023	10:50	Hadronic vacuum polarization contribution to the muon g-2 from lattice QCD - Simon Kuberski
8 Dec 2023	11:15	Tau hadronic decay input for Muon g-2 - Taku Izubuchi
8 Dec 2023	11:40	Global analysis of Lepton Flavor Violating Operators - emanuele moreghetti
8 Dec 2023	12:05	Status and plans of tau fits for HFLAV/PDG - Alberto Lusiani (Scuola Normale Superiore and INFN, sezione di Pisa)
8 Dec 2023	12:30	--- Lunch ---
8 Dec 2023	13:30	Friday after lunch - Kenji Inami (until 15:30)
8 Dec 2023	13:30	FASER experiment and first results from LHC Run 3 - Dr Umak Kose (ETH Zurich)
8 Dec 2023	13:50	Neutrino Electromagnetic Properties and the Weak Mixing Angle at the LHC Forward Physics Facility - Yu-Dai Tsai (University of California, Irvine)
8 Dec 2023	14:10	Study of additional radiation in the initial-state-radiation processes $e^+e^- \rightarrow \mu^+\mu^- \gamma$ and $e^+e^- \rightarrow \mu^+\mu^- \gamma \gamma$ in the BABAR experiment - Alberto Lusiani (Scuola Normale Superiore and INFN, sezione di Pisa)
8 Dec 2023	14:30	Partial wave analysis of $\pi^+ \pi^- \pi^0$ decays at Belle - Andrie Rabusov (Technical University of Munich)
8 Dec 2023	14:50	Search for charged lepton flavor violation in J/psi decays at BESIII - Xudong Yu (Peking University)
8 Dec 2023	15:30	--- Coffee break ---
8 Dec 2023	16:00	Friday afternoon - Michael Roney (until 18:00)
8 Dec 2023	16:00	Wishlist of neutrino results for Tau2025 - Andre De Gouvea
8 Dec 2023	16:30	Wishlist of G-2 results for Tau2025 - Brendan Kibug (Fermilab)
8 Dec 2023	17:00	Wishlist of Tau results for 2025 - Gianluca Inguglia (Austrian Academy of Sciences)
8 Dec 2023	17:30	Summary of Tau2023 - Soeren Andre Prell (Iowa State University)

Conference Photo at 12:30 pm, Tuesday December 5, 2023