

Session Program

Apr 3 - 6, 2022

IoP 2022 - Joint APP/HEPP Conference

Parallel Talks

Rutherford Appleton Laboratory

Mon, April 4

1:45 PM

Parallel Talks: Stream A: LHC searches

Session | **Location:** Pickavance Lecture Theatre | **Convener:** Andy Buckley

1:45 - 1:57 PM **Physics case for the proANUBIS prototype**

Speaker

Oleg Brandt

2:00 - 2:12 PM

Searches for long-lived particles with a disappearing track signature at $\sqrt{s} = 13$ TeV in the ATLAS experiment

Speaker

James Smith

2:15 - 2:27 PM

Search for heavy resonances decaying into a Z boson and a Higgs boson in final states with leptons and b-jets with the ATLAS detector at the LHC

Speaker

Tong Qiu

2:30 - 2:42 PM

Search for invisibly decaying Higgs bosons in ttH and VH channels in hadronic final states using full Run 2 data collected by the CMS detector

Speaker

Robert White

2:45 - 2:57 PM

Search for signatures of physics beyond the standard model (SM) in the di-tau final states using data collected at the CMS experiment from Run-2 at the LHC

Speaker

George Uttley

3:00 - 3:12 PM

Searching for Beyond the Standard Model Physics using Tau Leptons

Speaker

Mitchell Norfolk

3:15 - 3:27 PM

Exploring Multilepton Signatures from Dark Matter at the LHC

Speaker

Arran Freegard

3:30 - 3:42 PM

Decoding Dark Matter at future $e + e -$ colliders

Speaker

Alexander Belyaev

3:45 PM

1:45 PM

Parallel Talks: Stream B: LHCb**Session** | **Location:** Hamilton Room (Visitors Centre) | **Convener:** Franz Muheim

1:46 - 1:58 PM

Model agnostic measurement of $B^0 \rightarrow D^{*-} \tau^+ \nu_\tau$ angular coefficients using three-prong hadronic τ decays**Speaker**

Luke Scantlebury-Smead

2:00 - 2:12 PM

Searching for New Physics through the decay $B \rightarrow K^*0 \mu^+ \mu^-$ at LHCb**Speaker**

Matthew Birch

2:15 - 2:27 PM

Model Independent Measurement of CKM Gamma using $B \rightarrow D0K$, $D0 \rightarrow 2\pi^+ 2\pi^-$ Decays.**Speaker**

Benedict Westhenry

2:30 - 2:42 PM

Status of searches for rare or forbidden charm decays of the form $D^{+}_{(s)} \rightarrow h^{\pm} \ell^+ \ell^{\mp}$ **Speaker**

Zakariya Aliouche

2:45 - 2:57 PM

A Quasi model independent method to measure the relative strong phase in quantum correlated $D \rightarrow K\pi^+\pi^-$ decays and an use in CKM measurements in $B_{\pm} \rightarrow Dh_{\pm}$ decays.**Speaker**

Jake Lane

3:00 - 3:12 PM

Study of Ξ_b^- and Ω_b^- decays to the $\Lambda_c^+ h^- h'^-$ final state**Speaker**

Bhagyashree Pagare

3:15 - 3:27 PM

VELO Module Construction for the LHCb detector upgrade for Run3**Speaker**

Gianluca Zunica

3:30 - 3:42 PM

Simulation of Low Gain Avalanche Detectors(LGAD) for LHCb operation in Run IV**Speaker**

David Friday

3:45 PM

1:45 PM

Parallel Talks: Stream C: short baseline ν **Session** | **Location:** Visitors Centre (main room) | **Convener:** Melissa Uchida

1:46 - 1:58 PM

Sensitivity of a Boulby-based antineutrino detector to nuclear reactors over 100 km away.

Speaker
Elisabeth Kneale

2:00 - 2:12 PM **Recent results of the SoLid experiment**

Speaker
Daniel Galbinski

2:15 - 2:27 PM

Measurement of the Λ Baryon Production Cross Section in Neutrino Interactions with MicroBooNE

Speaker
Christopher Thorpe

2:30 - 2:42 PM

Measurement of the inclusive electron antineutrino cross-section on argon using the MicroBooNE detector

Speaker
Marina Reggiani-Guzzo

2:45 - 2:57 PM

Development of a search for Higgs Portal Scalars in MicroBooNE.

Speaker
Aditya Bhandari

3:00 - 3:12 PM

Reconstruction performance and characterisation of electromagnetic showers in the SBND detector.

Speaker
Ala Zglam

3:15 - 3:27 PM

A study of neutral current pion events at Super Kamiokande

Speaker
Dan Martin

3:30 - 3:42 PM

BOLEYN: a testbed for new neutrino detection technologies

Speaker
Andrew Scarff

3:45 PM

1:45 PM

Parallel Talks: Stream D: Dark matter

Session | **Location:** CR12/13 | **Convener:** Xin Ran Liu

1:46 - 1:58 PM

The LUX-ZEPLIN (LZ) Experiment

Speaker
Amy Cottle

2:00 - 2:12 PM

Se-Rn-dipitous Seque-LZ: Radon in LZ

Speaker
Nicolas Angelides

2:15 - 2:27 PM

Photon Detection in LUX-ZEPLIN (LZ) and LXe TPCs

Speaker
Albert Baker

2:30 - 2:42 PM

Saturation corrections in the LUX-ZEPLIN experiment

Speaker

Aiham Al Musalhi

2:45 - 2:57 PM

Preliminary projected sensitivity of LZ to Majoron-emitting double beta decay modes of ^{136}Xe

Speaker

Zhaozhen Tong

3:00 - 3:12 PM

FlameNEST

Speaker

Jordan Palmer

3:15 - 3:27 PM

Preparations for the first observation of the Migdal effect

Speaker

Timothy Marley

3:30 - 3:42 PM

Exploring the current and future physics potential of liquid noble direct dark matter detection experiments

Speaker

Ellen Sandford

3:45 PM

Tue, April 5

11:00 AM

Parallel Talks: Stream A: LHC

Session | **Location:** Pickavance Lecture Theatre | **Convener:** Veronique Boisvert

11:00 - 11:12 AM **W-boson and its polarisation at NNLO**

Speaker

Andrei Popescu

11:15 - 11:27 AM

Differential cross-section measurement for the electroweak production of W-gamma-jj at the ATLAS detector

Speaker

Benjamin Honan

11:30 - 11:42 AM

Probing the Standard Model with Rare Electroweak Multiboson Interactions

Speaker

Harry Cooke

11:45 - 11:57 AM

Search for exclusive hadronic W boson decays with the ATLAS experiment

Speaker

Júlia Silva

12:00 - 12:12 PM

Optimization of the Bs/Bd separation power in the ATLAS B->mumu branching ratio measurement

Speaker

Ondrej Kovanda

12:15 - 12:27 PM

A method for searching for parity violating physics at the LHC.

Speaker

Daniel Noel

12:30 PM

11:00 AM

Parallel Talks: Stream B: parton showers and more

Session | **Location:** Hamilton Room (Visitors Centre) | **Convener:** Chris White

11:00 - 11:12 AM **Colliding light, tau g-2, and axion detectors**

Speaker

Jesse Liu

11:15 - 11:27 AM

Towards an Algebraic Theory of Spin

Speaker

Peter Bradshaw

11:30 - 11:42 AM

MSHT20 Approximate N3LO Parton Distribution Functions with Theoretical Uncertainties

Speaker
Jamie McGowan

11:45 - 11:57 AM **Quarkonia showers in PYTHIA8**

Speaker
Naomi Cooke

12:00 - 12:12 PM

Quantum computing approaches for simulating parton showers in high energy collisions

Speaker
Simon Williams

12:15 - 12:27 PM **Graph neural nets for CMS particle track reconstruction**

Speaker
Liv Vage

12:30 PM

11:00 AM

Parallel Talks: Stream C: AION, MAGIS and axion DM

Session | **Location:** Visitors Centre (main room) | **Convener:** Teppei Katori

11:00 - 11:12 AM **MAGIS & AION: long baseline atom interferometry experiments**

Speaker
Leonie Hawkins

11:15 - 11:27 AM

AION and MAGIS-100: Atom Interferometry Detectors Searching for Ultralight Dark Matter and Gravitational Waves and Their Limiting Systematics

Speaker
Jeremiah Mitchell

11:30 - 11:42 AM **imaging for the MAGIS and AION interferometers**

Speaker
Dan Weatherill

11:45 - 11:57 AM

A Phase Shear detection system for the MAGIS-100 and AION experiments

Speaker
Gedminas Elertas

12:00 - 12:12 PM **Recent Progress in Radio Detection of Axion Dark Matter**

Speaker
Jamie McDonald

12:30 PM

11:00 AM

Parallel Talks: Stream D: DM detectors

Session | **Location:** CR12 | **Convener:** Theresa Fruth

11:00 - 11:12 AM

Towards efficient neutron spectroscopy with a Nitrogen-filled Spherical Proportional Counter

Speaker
Ioannis Manthos

11:15 - 11:27 AM

Reaching the neutrino floor for sub-GeV dark matter with spherical proportional counters fully electroformed underground

Speaker

Ioannis Katsioulas

11:30 - 11:42 AM

Qualification of Photo Detector Units for the DarkSide-20k experiment.

Speaker

Zoe Balmforth

11:45 - 11:57 AM

Mitigating Accidental Backgrounds in LZ using Convolution Neural Networks

Speaker

Ishan Khurana

12:00 - 12:12 PM

A Next Generation Liquid Xenon Observatory

Speaker

Kelsey Oliver-Mallory

12:15 - 12:27 PM

Sense and Sensitivity: Confronting the radiological screening challenges for next-generation rare event detectors

Speakers

XinRan Liu, Xinran Liu

12:30 PM

Wed, April 6

11:00 AM

Parallel Talks: Stream A: LHC upgrades

Session | **Location:** Pickavance Lecture Theatre | **Convener:** Tracey Berry

11:00 - 11:12 AM **Level-1 Track Finder for the CMS Upgrade for HL-LHC**

Speaker

Mei-Li Holmberg

11:15 - 11:27 AM

Neural Network-Based Primary Vertex Reconstruction with FPGAs for the Upgrade of the CMS Level-1 Trigger System

Speaker

Christopher Brown

11:30 - 11:42 AM

Performance and Upgrade of the CMS Electromagnetic Calorimeter

Speaker

Charlotte Cooke

11:45 - 11:57 AM

Commissioning of L1Calo phase I upgrade at ATLAS: development and testing of eFEX and FTM modules

Speaker

Gareth Bird

12:00 - 12:12 PM

Improving the performance of dealing with non-ideal tracks within ATLAS reconstruction.

Speaker

Donal McLaughlin

12:15 - 12:27 PM

Machine Learning based predictor for measurement-to-track association for the ATLAS Inner Detector Trigger

Speaker

Nisha Lad

12:30 PM

11:00 AM

Parallel Talks: Stream B: environmental & medical applications

Session | **Location:** Hamilton Room (Visitors Centre) | **Convener:** Matthew Needham

11:00 - 11:12 AM **Cosmic Ray Neutron Sensors for IoT Soil Moisture Monitoring**

Speaker

Patrick Stowell

11:15 - 11:27 AM

PlomBOX - development of a low-cost CMOS device for environmental monitoring

Speaker

Adriana Dias

11:30 - 11:42 AM

nFacet 3D: a novel dosimeter for effective dose measurement**Speaker**

Nicholas Reed

11:45 - 11:57 AM

QuARC - A Quality Assurance Range Calorimeter for Proton Therapy**Speaker**

Saad Shaikh

12:00 - 12:12 PM

Investigation of plasma (Gabor) lenses for capture and focusing of laser-driven ions**Speaker**

Titus-Stefan Dascalu

12:15 - 12:27 PM

Analysis of scintillating and reflective materials for X-ray Computed Tomography**Speaker**

Nicolo Tuccori

12:30 PM

11:00 AM

Parallel Talks: Stream C: long baseline ν **Session** | **Location:** Visitors Centre (main room) | **Convener:** Jaroslaw Nowak

11:00 - 11:12 AM

The Nue/Numu Ratio within the NuMI Beam**Speaker**

Alexandra Moor

11:15 - 11:27 AM

Status of the Triple Differential Numu Bar CC Inclusive Cross-Section Analysis using Data Collected by the NOvA Near Detector**Speaker**

Prabhjot Singh

11:30 - 11:42 AM

Searching for an Improved NOvA 3-flavour Neutrino Oscillation Analysis Event Selection**Speaker**

Veera Mikola

11:45 - 11:57 AM

Transverse Kinematic Imbalance study in ProtoDUNE-SP for the interaction proton - argon**Speaker**

Stefano Vergani

12:00 - 12:12 PM

Development of the Pandora LArTPC event reconstruction to optimise the sensitivity to CP violation at DUNE**Speaker**

Isobel Mawby

12:15 - 12:27 PM

Calibration of DUNE Far Detector using cosmic-ray muons

12:30 PM

Speaker
Praveen Kumar

11:00 AM

Parallel Talks: Stream D: LUXE, $0\nu\beta\beta$ and supernova ν

Session | **Location:** CR12/13 | **Convener:** Teppei Katori

11:00 - 11:12 AM

Detection and Reconstruction of High-Flux Electron Energy Spectra in the Strong-Field QED Regime with LUXE

Speaker
John Hallford

11:15 - 11:27 AM

Status of the R2D2 $0\nu\beta\beta$ Experiment

Speaker
Patrick Knights

11:30 - 11:42 AM

Characterisation of Germanium Detectors for LEGEND-200

Speaker
Abigail Alexander

11:45 - 11:57 AM

Detecting supernova neutrinos at SNO+

Speaker
Sammy Valder

12:00 - 12:12 PM

Supernova Discrimination with a Kiloton-scale Water Cherenkov Detector

Speaker
Yan-Jie Schnellbach

12:15 - 12:27 PM

Probing extreme-energy universe through EeV neutrino detection with the ANITA and PUEO experiments

Speaker
Cheng Xie

12:30 PM

1:30 PM

Parallel Talks: Stream A: LHC $t\bar{t} + X$

Session | **Location:** Pickavance Lecture Theatre | **Convener:** Sarah Williams

1:30 - 1:42 PM

Measurements of the differential production cross sections of a top quark pair in association with a Z boson with the ATLAS detector.

Speaker
Laurynas Mince

1:45 - 1:57 PM

Boosting the Higgs with $t\bar{t}H(bb)$, using the ATLAS detector

Speaker
Albert Borbely

2:00 - 2:12 PM

Search for Four Top Quark Production at CMS

Speaker
Nicolas Stylianou

2:15 - 2:27 PM

Measurement of Jet Substructure Observables in Boosted $t\bar{t}$ Events at 13~TeV Using the ATLAS Detector at the LHC**Speaker**

Adam Rennie

2:30 PM

1:30 PM

Parallel Talks: Stream B: LHCb**Session** | **Location:** Hamilton Room (Visitors Centre) | **Convener:** Paula Alvarez

1:30 - 1:42 PM

Mixing and CP violation with $D^0 \rightarrow K\pi\pi$ at the LHCb experiment**Speakers**

Martha Hilton, Martha Hilton, Martha Hilton

1:45 - 1:57 PM

Search for local CP violation in the phase-space of $D^0 \rightarrow \pi^-\pi^+\pi^0$ decays using the energy test with LHCb Run 2 data**Speaker**

John Cobble Dick

2:00 - 2:12 PM

Five-dimensional phase-space efficiency in $D \rightarrow K3\pi$ at LHCb for precision CP violation measurements**Speaker**

Richard Lane

2:15 - 2:27 PM

Beauty to doubly open charm decays with the LHCb detector**Speaker**

Fionn Bishop

2:30 PM

1:30 PM

Parallel Talks: Stream C: neutrino detectors**Session** | **Location:** Visitors Centre (main room) | **Convener:** Matthew Malek

1:30 - 1:42 PM

Large Area Picosecond Photodetectors for future neutrino detectors**Speaker**

Robert Foster

1:45 - 1:57 PM

A new easily scalable readout system for distributed photomultiplier detector networks**Speaker**

Petr Mánek

2:00 - 2:12 PM

Event by Event Directional Reconstruction in the SNO+ Scintillator Phase**Speaker**

Josephine Paton

2:15 - 2:27 PM

A Statistical Approach to Modelling the Optical Scattering Calibration System in SNO+

2:30 PM

Speaker
Daniel Cookman

1:30 PM

Parallel Talks: Stream D: muon physics
Session | **Location:** CR12/13 | **Convener:** Kostas Nikolopoulos

1:30 - 1:42 PM

Measuring the anomalous precession frequency of the muon with the Muon g-2 tracking detectors

Speaker
George Sweetmore

1:45 - 1:57 PM

Searching for a muon EDM at the new g-2 experiment at Fermilab

Speaker
Dominika Vasilkova

2:00 - 2:12 PM

Physics Validations of Simulations for the COMET Low-Energy, Neutrinoless μ -e Conversion Experiment

Speaker
Roden Derveni

2:15 - 2:27 PM

Track pileup mitigation using a one-dimensional maximum likelihood fit for the Mu3e experiment

Speaker
Benjamin Gayther

2:30 PM