

**Brookhaven Forum 2023
Advancing Searches for New
Physics (BF2023)**

Report of Contributions

Contribution ID: 1

Type: **not specified**

Welcome to the Brookhaven Forum

Wednesday, 4 October 2023 08:45 (15 minutes)

Presenters: DENTON, Peter; SZAFRON, Robert (Brookhaven National Laboratory)

Session Classification: Organizers

Contribution ID: 2

Type: **not specified**

Recent BSM results from ATLAS and CMS

Wednesday, 4 October 2023 09:00 (40 minutes)

Presenter: SFAR, Haifa Rejeb (Antwerp U.)

Session Classification: Plenary

Contribution ID: 3

Type: **not specified**

Recent SM results (including Higgs) from ATLAS and CMS

Wednesday, 4 October 2023 09:40 (40 minutes)

Presenter: ASBAH, Nedaa-Alexandra Asbah (CERN)

Session Classification: Plenary

Contribution ID: 4

Type: **not specified**

Building non-vanilla QCD axion models and Perspectives on DEI from an American Scientist in Germany

Friday, 6 October 2023 09:00 (40 minutes)

Presenter: YU, Felix (Johannes Gutenberg Universität Mainz)

Session Classification: Plenary

Contribution ID: 5

Type: **not specified**

Physics with neutrinos at a Large Hadron Collider Forward Physics Facility

Friday, 6 October 2023 09:40 (40 minutes)

Presenter: RENO, Mary Hall (University of Iowa)

Session Classification: Plenary

Contribution ID: 6

Type: **not specified**

Recent advances in flavor physics

Thursday, 5 October 2023 09:00 (40 minutes)

Presenter: BORDONE, Marzia (CERN)

Session Classification: Plenary

Contribution ID: 7

Type: **not specified**

Charged Lepton Flavor Violation and the Mu2e Experiment

Wednesday, 4 October 2023 10:40 (40 minutes)

Presenter: BERNSTEIN, Robert (Fermilab)

Session Classification: Plenary

Contribution ID: 8

Type: **not specified**

The search for sub-GeV dark matter

Thursday, 5 October 2023 12:00 (40 minutes)

Presenter: LIN, Tongyan (University of California - San Diego)

Session Classification: Plenary

Contribution ID: 9

Type: **not specified**

Dark matter cosmology

Thursday, 5 October 2023 11:20 (40 minutes)

Presenter: GLUSCEVIC, Vera (University of Southern California)

Session Classification: Plenary

Contribution ID: **10**

Type: **not specified**

(Machine) Learning of Dark Matter around the Milky Way

Thursday, 5 October 2023 10:40 (40 minutes)

Presenter: NECIB, Lina (Massachusetts Institute of Technology)

Session Classification: Plenary

Contribution ID: 11

Type: **not specified**

Gravitational Wave Observations and the Search for New Physics

Thursday, 5 October 2023 16:00 (1 hour)

Presenter: HANNA, Chad (Penn State University)

Session Classification: Public Lecture

Contribution ID: 12

Type: **not specified**

Precision predictions: lightcone expansion beyond NLP

Thursday, 5 October 2023 09:40 (40 minutes)

Presenter: JASKIEWICZ, Sebastian (Durham University)

Session Classification: Plenary

Contribution ID: 13

Type: **not specified**

Future Colliders

Wednesday, 4 October 2023 11:20 (40 minutes)

Presenter: GONSKI, Julia (SLAC National Accelerator Laboratory)

Session Classification: Plenary

Contribution ID: 14

Type: **not specified**

Neutrinos at 67

Friday, 6 October 2023 10:40 (40 minutes)

Primary author: BARENBOIM, Gabriela (University of Valencia and IFIC)

Presenter: BARENBOIM, Gabriela (University of Valencia and IFIC)

Session Classification: Plenary

Contribution ID: 15

Type: **not specified**

Current and Future Neutrino Experiments

Friday, 6 October 2023 11:20 (40 minutes)

Presenter: DWYER, Daniel (Lawrence Berkeley National Laboratory)

Session Classification: Plenary

Contribution ID: 16

Type: **not specified**

Cosmological Constraints on Dirac Neutrino Mass Models

Wednesday, 4 October 2023 15:00 (20 minutes)

Presenter: SHAMMA, Michael (TRIUMF)

Session Classification: Cosmology

Track Classification: Cosmology

Contribution ID: 17

Type: **not specified**

Placing Limits on the Dimension-5 Seesaw Portal with Non-pointing Photons

Wednesday, 4 October 2023 15:00 (20 minutes)

Presenter: JONES-PEREZ, Joel (PUCP)

Session Classification: Neutrino+LHC/CCM

Track Classification: Neutrino+LHC/CCM

Contribution ID: 18

Type: **not specified**

Dark Matter in Higgs-Mechanism-Inspired Emergent Gravity

Wednesday, 4 October 2023 14:00 (20 minutes)

Presenter: DEMIR, Durmus (Sabanci University)

Session Classification: Dark Matter

Track Classification: Dark Matter

Contribution ID: 20

Type: **not specified**

Probing energy, intensity and cosmic frontiers through light Z-prime

Thursday, 5 October 2023 14:00 (20 minutes)

Presenter: DAS, Arindam (Hokkaido University)

Session Classification: BSM

Track Classification: BSM

Contribution ID: 21

Type: **not specified**

Recent Hidden Sector Searches with BABAR

Wednesday, 4 October 2023 15:40 (20 minutes)

Presenter: SHUVE, Brian (Harvey Mudd College)

Session Classification: B-Physics

Track Classification: B-Physics

Contribution ID: 22

Type: **not specified**

Revising the phenomenology of axion-like particles coupled to fermions

Wednesday, 4 October 2023 14:20 (20 minutes)

Presenter: OVCHYNNIKOV, Maksym (Karlsruhe Institute of Technology)

Session Classification: Axion

Track Classification: Axion

Contribution ID: 23

Type: **not specified**

Dark Matter Induced Power in Quantum Devices

Wednesday, 4 October 2023 14:20 (20 minutes)

Presenter: DAS, Anirban (Seoul National University)

Session Classification: Dark Matter

Track Classification: Dark Matter

Contribution ID: 25

Type: **not specified**

Status of the CODEX-b Experiment in the search for BSM LLPs

Thursday, 5 October 2023 14:40 (20 minutes)

Presenter: DURMUS, Ozgur (Eotvos Lorand University)

Session Classification: BSM

Track Classification: BSM

Contribution ID: 26

Type: **not specified**

Searching for New Physics in Lambda_b decays at LHCb

Wednesday, 4 October 2023 15:20 (20 minutes)

Presenter: SAHOO, Debashis (ELTE, Hungary)

Session Classification: B-Physics

Track Classification: B-Physics

Contribution ID: 27

Type: **not specified**

Measurement of the atmospheric muon neutrino flux with KM3NeT/ORCA6

Thursday, 5 October 2023 14:20 (20 minutes)

Presenter: STAVROPOULOS, Dimitris (Nat. Cent. for Sci. Res. Demokritos)

Session Classification: Neutrino

Track Classification: Neutrino 3

Contribution ID: 28

Type: **not specified**

The IsoDAR Experiment

Thursday, 5 October 2023 15:20 (20 minutes)

Presenter: VILLARREAL, Joshua (Massachusetts Institute of Technology)

Session Classification: Neutrino

Track Classification: Neutrino 3

Contribution ID: 29

Type: **not specified**

KM3NeT Status and Physics Results

Thursday, 5 October 2023 14:00 (20 minutes)

Presenter: DRAKOPOULOU, Evangelia (National Centre of Scientific Research "Demokritos")

Session Classification: Neutrino

Track Classification: Neutrino 3

Contribution ID: 30

Type: **not specified**

Constraining Non-Unitary Neutrino Mixing using Earth's Matter Effect in Atmospheric Neutrino Oscillations

Wednesday, 4 October 2023 15:20 (20 minutes)

Presenter: SAHOO, Sadashiv (Homi Bhabha National Institute)

Session Classification: Neutrino

Track Classification: Neutrino 1

Contribution ID: 31

Type: **not specified**

Sterile Neutrino Global Fits: 3+1 and Beyond?

Thursday, 5 October 2023 14:40 (20 minutes)

Presenter: HARDIN, John (Massachusetts Institute of Technology)

Session Classification: Neutrino

Track Classification: Neutrino 3

Contribution ID: 32

Type: **not specified**

Constraining Neutrino Self-Interactions with IceCube Point Source Data

Wednesday, 4 October 2023 14:20 (20 minutes)

Presenter: HYDE, Jeff (Swarthmore College)

Session Classification: Neutrino

Track Classification: Neutrino 2

Contribution ID: 33

Type: **not specified**

Core-collapse supernovae - ideal environments to probe new physics

Wednesday, 4 October 2023 13:00 (20 minutes)

Presenter: SULIGA, Anna (University of California-Berkeley)

Session Classification: Neutrino

Track Classification: Neutrino 2

Contribution ID: 34

Type: **not specified**

A Survey of Neutrino Flavor Models and the Neutrinoless Double Beta Decay Funnel

Wednesday, 4 October 2023 13:40 (20 minutes)

Presenter: GEHRLEIN, Julia (Colorado State University)

Session Classification: Neutrino

Track Classification: Neutrino 2

Contribution ID: 35

Type: **not specified**

Wrinkles in the Froggatt-Nielsen Mechanism and Flavorful New Physics

Thursday, 5 October 2023 15:00 (20 minutes)

Presenter: FRASER, Katherine (Harvard University)

Session Classification: BSM

Track Classification: BSM

Contribution ID: **36**

Type: **not specified**

The Belle II Upgrade Program

Wednesday, 4 October 2023 15:00 (20 minutes)

Presenter: MARINAS, Carlos (IFIC (CSIC-UV))

Session Classification: B-Physics

Track Classification: B-Physics

Contribution ID: 37

Type: **not specified**

SensCalc: public and unified calculations of sensitivities to feebly interacting particles

Thursday, 5 October 2023 14:20 (20 minutes)

Presenter: TASTET, Jean-Loup (Universidad Autónoma de Madrid)

Session Classification: BSM

Track Classification: BSM

Contribution ID: 38

Type: **not specified**

Dark Contributions to $h \rightarrow \mu+\mu-$ in the Presence of a μ -Flavored Vector-Like Lepton

Thursday, 5 October 2023 14:00 (20 minutes)

Presenter: DE, Bibhabasu (The ICFAI University, Tripura)

Session Classification: LHC

Track Classification: LHC

Contribution ID: 39

Type: **not specified**

Probing new physics with open quantum dynamics

Wednesday, 4 October 2023 13:20 (20 minutes)

Presenter: KÄDING, Christian (TU Wien)

Session Classification: Dark Matter

Track Classification: Dark Matter

Contribution ID: 40

Type: **not specified**

NNLO QCD corrections for the production of a heavy-quark pair in association with a massive boson

Wednesday, 4 October 2023 13:20 (20 minutes)

Presenter: SAVOINI, Chiara (University of Zürich)

Session Classification: QCD

Track Classification: QCD

Contribution ID: 42

Type: **not specified**

Storage Ring Proton EDM Experiment and Search for Axionlike Dark Matter

Wednesday, 4 October 2023 13:00 (20 minutes)

Presenter: KIM, On (University of Mississippi)

Session Classification: Axion

Track Classification: Axion

Contribution ID: 43

Type: **not specified**

Validating Earth's Matter Effect in Atmospheric Neutrino Oscillations at IceCube-DeepCore

Wednesday, 4 October 2023 15:40 (20 minutes)

Presenter: UPADHYAY, Anuj Kumar (Aligarh Muslim University, Aligarh, and Institute of Physics, Bhubaneswar, India)

Session Classification: Neutrino

Track Classification: Neutrino 1

Contribution ID: 44

Type: **not specified**

Establishing Layered Structure Inside Earth Using Atmospheric Neutrino Oscillations at IceCube-DeepCore

Wednesday, 4 October 2023 16:00 (20 minutes)

Presenter: J, Krishnamoorthi (Institute of Physics, Bhubaneswar, India. Aligarh Muslim University, Aligarh, India.)

Session Classification: Neutrino

Track Classification: Neutrino 1

Contribution ID: 45

Type: **not specified**

Measuring the Mass of Earth and Core Using Neutrino Oscillations at IceCube-DeepCore

Wednesday, 4 October 2023 16:20 (20 minutes)

Presenter: CHATTOPADHYAY, Sharmistha (Institute of Physics, Bhubaneswar, India)

Session Classification: Neutrino

Track Classification: Neutrino 1

Contribution ID: 46

Type: **not specified**

NNLO+PS-accurate event generation for $pp \rightarrow Zh$ with contributions from electroweak SMEFT operators

Wednesday, 4 October 2023 13:40 (20 minutes)

Presenter: SCHNELL, Luc (Max Planck Institute for Physics)

Session Classification: QCD

Track Classification: QCD

Contribution ID: 47

Type: **not specified**

Prospects of Heavy Higgs scalar in the natural SUSY at LHC upgrades

Thursday, 5 October 2023 14:20 (20 minutes)

Presenter: ZHANG, Kairui (University of Wisconsin)

Session Classification: LHC

Track Classification: LHC

Contribution ID: 48

Type: **not specified**

New Physics with Primordial Black Holes

Wednesday, 4 October 2023 16:00 (20 minutes)

Presenter: XU, Tao (University of Oklahoma)

Session Classification: Cosmology

Track Classification: Cosmology

Contribution ID: 50

Type: **not specified**

Searching for new physics at the LHC with wavelet transforms

Thursday, 5 October 2023 15:20 (20 minutes)

Presenter: KATS, Yevgeny (Ben-Gurion University)

Session Classification: LHC

Track Classification: LHC

Contribution ID: 51

Type: **not specified**

QCD-Collapsed Domain Walls: QCD Phase Transition and Gravitational Wave Spectroscopy

Wednesday, 4 October 2023 15:20 (20 minutes)

Presenter: KORWAR, Mrunal Prashant (University of California-Berkeley)

Session Classification: Cosmology

Track Classification: Cosmology

Contribution ID: 52

Type: **not specified**

Hot Topics at Belle II

Wednesday, 4 October 2023 16:00 (20 minutes)

Presenter: SHWARTZ, Boris (Budker Institute of Nuclear Physics)

Session Classification: B-Physics

Track Classification: B-Physics

Contribution ID: 53

Type: **not specified**

Probing Heavy Neutral Leptons at the FCC-ee

Wednesday, 4 October 2023 15:40 (20 minutes)

Presenter: KONTAXAKIS, Pantelis (Universite de Geneve)

Session Classification: Neutrino+LHC/CCM

Track Classification: Neutrino+LHC/CCM

Contribution ID: 54

Type: **not specified**

On the gauge-invariance of SCET beyond leading-power

Wednesday, 4 October 2023 14:20 (20 minutes)

Presenter: HAGER, Patrick (MITP, Johannes Gutenberg University Mainz)

Session Classification: QCD

Track Classification: QCD

Contribution ID: 55

Type: **not specified**

QCD Axion-Mediated Dark Matter

Wednesday, 4 October 2023 14:00 (20 minutes)

Presenter: MUNBODH, Pankaj (University of California Santa Cruz)

Session Classification: Axion

Track Classification: Axion

Contribution ID: 56

Type: **not specified**

Weaker gravity and thermal relic abundance

Wednesday, 4 October 2023 13:40 (20 minutes)

Presenter: SULLIVAN, Matthew (Brookhaven National Laboratory)

Session Classification: Dark Matter

Track Classification: Dark Matter

Contribution ID: 57

Type: **not specified**

BSM physics at Coherent CAPTAIN-Mills

Wednesday, 4 October 2023 16:00 (20 minutes)

Presenter: TRIPATHI, Mayank (University of Florida)

Session Classification: Neutrino+LHC/CCM

Track Classification: Neutrino+LHC/CCM

Contribution ID: 58

Type: **not specified**

Probing New Physics with $\mu^+ \mu^- \rightarrow bs$ at a Muon Collider

Thursday, 5 October 2023 15:20 (20 minutes)

Presenter: GADAM, Sri Aditya (University of California - Santa Cruz)

Session Classification: BSM

Track Classification: BSM

Contribution ID: 59

Type: **not specified**

Discriminating between Higgs Production Mechanisms via Jet Charge at the LHC

Thursday, 5 October 2023 15:00 (20 minutes)

Presenter: YAN, Bin (Institute of High Energy Physics, Chinese Academy of Science)

Session Classification: LHC

Track Classification: LHC

Contribution ID: 60

Type: **not specified**

Dark Z Boson and Explanation of W Mass Anomaly

Thursday, 5 October 2023 14:20 (20 minutes)

Presenter: LEE, Jiheon (Korea Advanced Institute of Science and Technology (KAIST))

Session Classification: Dark Matter & Flavor models

Track Classification: Dark Matter & Flavor Models

Contribution ID: **61**

Type: **not specified**

Gauged Quintessence

Wednesday, 4 October 2023 15:40 (20 minutes)

Presenter: YI, Jaeok (KAIST)

Session Classification: Cosmology

Track Classification: Cosmology

Contribution ID: 62

Type: **not specified**

Aiming for Tops of ALPs with a Muon Collider

Wednesday, 4 October 2023 13:20 (20 minutes)

Presenter: ZHANG, Yufei (Tsung-Dao Lee Institute, Shanghai Jiao Tong University)

Session Classification: Axion

Track Classification: Axion

Contribution ID: 63

Type: **not specified**

Hide and Seek: How PDFs can conceal New Physics

Wednesday, 4 October 2023 14:00 (20 minutes)

Presenter: HAMMOU, Elie (University of Cambridge)

Session Classification: QCD

Track Classification: QCD

Contribution ID: 64

Type: **not specified**

Quark mass matrices Minimized

Thursday, 5 October 2023 15:00 (20 minutes)

Presenter: , Nikhila (Panjab University)

Session Classification: Dark Matter & Flavor models

Track Classification: Dark Matter & Flavor Models

Contribution ID: 65

Type: **not specified**

Status of the LUX-ZEPLIN (LZ) Dark Matter Experiment

Thursday, 5 October 2023 14:00 (20 minutes)

Presenter: WILLIAMS, Michael (University of Michigan)

Session Classification: Dark Matter & Flavor models

Track Classification: Dark Matter & Flavor Models

Contribution ID: 66

Type: **not specified**

CP-Violating top-Higgs coupling in SMEFT

Thursday, 5 October 2023 14:40 (20 minutes)

Presenter: ZHENG, Ya-Juan (Iwate University)

Session Classification: LHC

Track Classification: LHC

Contribution ID: 67

Type: **not specified**

An Updated eV-scale Sterile Neutrino Search with IceCube

Thursday, 5 October 2023 15:00 (20 minutes)

Presenter: WEIGEL, Philip (Massachusetts Institute of Technology)

Session Classification: Neutrino

Track Classification: Neutrino 3

Contribution ID: 68

Type: **not specified**

Minimal realisation of light thermal self-interacting dark matter

Wednesday, 4 October 2023 13:00 (20 minutes)

Presenter: MAHAPATRA, Satyabrata (Sungkyunkwan University)

Session Classification: Dark Matter

Track Classification: Dark Matter

Contribution ID: 69

Type: **not specified**

Cherenkov Light Identification at CCM

Wednesday, 4 October 2023 16:20 (20 minutes)

Presenter: NEWMARK, Darcy (Massachusetts Institute of Technology)

Session Classification: Neutrino+LHC/CCM

Track Classification: Neutrino+LHC/CCM

Contribution ID: 70

Type: **not specified**

B anomalies at Belle II

Wednesday, 4 October 2023 16:20 (20 minutes)

Presenter: MANONI, Elisa (INFN)

Session Classification: B-Physics

Track Classification: B-Physics

Contribution ID: 71

Type: **not specified**

Neutrino floor for dark matter electron scattering experiments

Thursday, 5 October 2023 14:40 (20 minutes)

Presenter: MAITY, Tarak (Harish-Chandra Research Institute)

Session Classification: Dark Matter & Flavor models

Track Classification: Dark Matter & Flavor Models

Contribution ID: 72

Type: **not specified**

Physics of Kr-83m by Cyclotron Radiation Emission Spectroscopy

Wednesday, 4 October 2023 14:00 (20 minutes)

Presenter: SUN, Yuhao (Case Western Reserve University)

Session Classification: Neutrino

Track Classification: Neutrino 2

Contribution ID: 73

Type: **not specified**

Probing axion dark matter with radio waves

Wednesday, 4 October 2023 13:40 (20 minutes)

Presenter: OKAWA, Takuya (Washington University in St. Louis)

Session Classification: Axion

Track Classification: Axion

Contribution ID: 74

Type: **not specified**

Flavor Hierarchies from a Gauged SU(2) Symmetry

Thursday, 5 October 2023 15:20 (20 minutes)

Presenter: THOMSEN, Anders Eller (University of Bern)

Session Classification: Dark Matter & Flavor models

Track Classification: Dark Matter & Flavor Models

Contribution ID: 134

Type: **not specified**

Cosmological Phase Transitions in Composite Higgs Models

Wednesday, 4 October 2023 16:20 (20 minutes)

Presenter: WANG, Yaoduo (Tsung-Dao Lee Institute, Shanghai Jiao Tong University)

Session Classification: Cosmology

Track Classification: Cosmology

Contribution ID: 135

Type: **not specified**

Connecting $(g - 2)$ to neutrino mass in the extended neutrinophilic 2HDM

Wednesday, 4 October 2023 15:00 (20 minutes)

Presenter: CHERCHIGLIA, Adriano (UNICAMP)

Session Classification: Neutrino

Track Classification: Neutrino 1

Contribution ID: 136

Type: **not specified**

Dark Sector searches at Belle II

Wednesday, 4 October 2023 16:40 (20 minutes)

Presenter: GRAZIANI, Enrico (INFN and University Roma)

Session Classification: B-Physics

Track Classification: B-Physics

Contribution ID: 137

Type: **not specified**

Anomalous Higgs boson couplings in WBF Higgs boson production

Wednesday, 4 October 2023 13:00 (20 minutes)

Presenter: ASTERIADIS, Konstantin

Session Classification: QCD

Track Classification: QCD