

**Brookhaven Forum 2019:  
Particle Physics and  
Cosmology in the 2020's**

**Report of Contributions**

Contribution ID: 1

Type: **not specified**

## **BSA Distinguished Lecture-Hosted by Christie Nelson**

*Wednesday, 25 September 2019 16:00 (1 hour)*

“Seeing the Unseeable: Making the First Image of a Black Hole”

Presented by Sheperd Doeleman (Harvard-Smithsonian Center for Astrophysics; Director, Event Horizon Telescope)

**Presenter:** DOELEMAN, Sheperd (Harvard-Smithsonian Center for Astrophysics, Director, Event Horizon Telescope)

Contribution ID: 2

Type: **not specified**

## Welcome

*Wednesday, 25 September 2019 13:20 (10 minutes)*

**Presenter:** DENISOV, Dmitri (Brookhaven National Laboratory)

**Session Classification:** Plenary Program

Contribution ID: 3

Type: **not specified**

## **Highlights from Beyond the Standard Model Searches at ATLAS and CMS**

*Wednesday, 25 September 2019 13:30 (40 minutes)*

**Presenter:** DILDICK, Sven (Texas A&M/CMS)

**Session Classification:** Plenary Program

Contribution ID: 4

Type: **not specified**

## **SM highlights from ATLAS and CMS**

*Wednesday, 25 September 2019 14:10 (40 minutes)*

**Presenter:** LEBLANC, Matthew (U Arizona/ATLAS)

**Session Classification:** Plenary Program

Contribution ID: 5

Type: **not specified**

## **Current Status and Future Prospects for Gravitational Wave Astrophysics**

*Wednesday, 25 September 2019 14:50 (40 minutes)*

**Presenter:** CHATZIOANNOU, Katerina (Flatiron Institute)

**Session Classification:** Plenary Program

Contribution ID: 6

Type: **not specified**

## Recent Highlights from Flavor Physics

*Thursday, 26 September 2019 09:00 (40 minutes)*

**Presenter:** JAWAHERY, Hassan (University of Maryland)

**Session Classification:** Plenary Program I

Contribution ID: 7

Type: **not specified**

## **Dark Matter Theory Overview**

*Thursday, 26 September 2019 09:40 (40 minutes)*

**Presenter:** LISANTI, Mariangela (Princeton)

**Session Classification:** Plenary Program I



Contribution ID: 8

Type: **not specified**

## **Dark Sector Phenomenology**

*Thursday, 26 September 2019 10:50 (40 minutes)*

**Presenter:** SHOEMAKER, Ian (Virginia Tech)

**Session Classification:** Plenary Program II

Contribution ID: 9

Type: **not specified**

## Status of Muon g-2

*Thursday, 26 September 2019 11:30 (40 minutes)*

**Presenter:** JIN, Luchang (University of Connecticut)

**Session Classification:** Plenary Program II

Contribution ID: 10

Type: **not specified**

## DM/Neutrino - Room A - Long Live the Higgs Portal!

*Thursday, 26 September 2019 13:30 (20 minutes)*

In Higgs portal models of fermion dark matter, scalar couplings are unavoidably suppressed by strong bounds from direct detection experiments. As a consequence, thermal dark matter relics must coexist with mediators in a compressed spectrum of dark particles. Small couplings and small mass splittings lead to slow mediator decays, leaving signatures with displaced vertices or disappearing tracks at colliders. We perform a comprehensive analysis of long-lived mediators at the LHC in the context of a minimal dark matter model with a naturally small Higgs portal, also known as the wino-bino scenario in supersymmetry. Existing searches for disappearing charged tracks and displaced hard leptons already exclude tiny portal couplings that cannot be probed by current direct and indirect detection experiments. For larger portal couplings, we predict new signatures with displaced soft leptons, which are accessible with run-II data. Searches for displaced particles are sensitive to weakly coupling mediators with masses up to the TeV scale, well beyond the reach of prompt signals.

**Presenter:** FILIMONOVA, Anastasiia (University of Heidelberg)

**Session Classification:** Parallel Session I

Contribution ID: 11

Type: **not specified**

## **DM/Neutrino - Room A - PROSPECT**

*Thursday, 26 September 2019 13:50 (20 minutes)*

**Presenter:** JI, Xiangpan (Physics)

**Session Classification:** Parallel Session I

Contribution ID: 12

Type: **not specified**

## **DM/Neutrino - Room A - IceCube Bounds on Sterile Neutrinos Above 10 eV**

*Thursday, 26 September 2019 14:10 (20 minutes)*

**Presenter:** GEHRLEIN, Julia (BNL)

**Session Classification:** Parallel Session I

Contribution ID: 13

Type: **not specified**

## **DM/Neutrino - Room A - Wire-cell - A Software Effort on Liquid Argon TPC Event Reconstruction**

*Thursday, 26 September 2019 14:30 (20 minutes)*

**Presenter:** YU, Haiwang (Brookhaven National Laboratory)

**Session Classification:** Parallel Session I

Contribution ID: 14

Type: **not specified**

## **DM/Neutrino - Room A -**

*Thursday, 26 September 2019 14:50 (20 minutes)*

**Session Classification:** Parallel Session I

Contribution ID: 15

Type: **not specified**

## **NP Searches/BSM - Room B - Mass-split Composite Higgs Model with Large Scale Separation**

*Thursday, 26 September 2019 13:30 (20 minutes)*

**Presenter:** WITZEL, Oliver (University of Colorado Boulder)

**Session Classification:** Parallel Session I



Contribution ID: 16

Type: **not specified**

## **NP Searches/BSM - Room B - Vacuum Stability and Symmetry Breaking in Left-Right Symmetric Model**

*Thursday, 26 September 2019 13:50 (20 minutes)*

**Presenter:** CHAUHAN, Garv (Washington University St. Louis)

**Session Classification:** Parallel Session I

Contribution ID: 17

Type: **not specified**

## **NP Searches/BSM - Room B - Leptoquark Phenomenology in the EFT**

*Thursday, 26 September 2019 14:10 (20 minutes)*

**Presenter:** BAR-SHALOM, Shaouly (Technion)

**Session Classification:** Parallel Session I

Contribution ID: 18

Type: **not specified**

## **NP Searches/BSM - Room B - Antihydrogen Spectroscopy & Antimatter Gravity in the ALPHA Experiment at CERN**

*Thursday, 26 September 2019 14:30 (20 minutes)*

**Presenter:** RASMUSSEN, Christopher (CERN)

**Session Classification:** Parallel Session I

Contribution ID: 19

Type: **not specified**

## **NP Searches/BSM - Room B - Constraints on R-Parity Violating Couplings from $\tau$ Drell-Yan Data at the LHC**

*Thursday, 26 September 2019 14:50 (20 minutes)*

**Presenter:** BANSAL, Saurabh (University of Notre Dame)

**Session Classification:** Parallel Session I

Contribution ID: 20

Type: **not specified**

## **Flavor/CP - Room C - Delta m\_K**

*Thursday, 26 September 2019 13:30 (20 minutes)*

**Presenter:** WANG, Bigeng (Columbia University)

**Session Classification:** Parallel Session I

Contribution ID: 21

Type: **not specified**

## **Flavor/CP - Room C - B Leptonic Decays: Results at Belle and prospects at Belle II**

*Thursday, 26 September 2019 13:50 (20 minutes)*

**Presenter:** NAKANO, Eiichi (Osaka City University)

**Session Classification:** Parallel Session I

Contribution ID: 22

Type: **not specified**

## **Flavor/CP - Room C - B Semi-leptonic Decays at Belle/Belle II**

*Thursday, 26 September 2019 14:10 (20 minutes)*

**Presenter:** GEBAUER, Uwe (University of Göttingen)

**Session Classification:** Parallel Session I

Contribution ID: 23

Type: **not specified**

## **Flavor/CP - Room C - Signatures of Flavorful 2HDM's**

*Thursday, 26 September 2019 14:30 (20 minutes)*

**Presenter:** MADDOCK, Brian (University of California, Santa Cruz)

**Session Classification:** Parallel Session I



Contribution ID: 24

Type: **not specified**

## **Flavor/CP - Room C -**

*Thursday, 26 September 2019 14:50 (20 minutes)*

**Session Classification:** Parallel Session I

Contribution ID: 25

Type: **not specified**

## **DM/Neutrino - Room A - A Study of Density Perturbations for the Unified DM & Dark Energy in Chaplygin Gas Cosmology**

*Thursday, 26 September 2019 15:40 (20 minutes)*

**Presenter:** ABDULRAHMAN, Heba (North-West University )

**Session Classification:** Parallel Session II

Contribution ID: 26

Type: **not specified**

## **DM/Neutrino - Room A - Self-Interacting Warm Dark Matter Bounds**

*Thursday, 26 September 2019 16:00 (20 minutes)*

**Presenter:** GIFT, Daniel (Stony Brook University)

**Session Classification:** Parallel Session II

Contribution ID: 27

Type: **not specified**

## **DM/Neutrino - Room A - GeV Scale Messengers of Planck Scale Dark Matter**

*Thursday, 26 September 2019 16:20 (20 minutes)*

**Presenter:** MOHLABENG, Gopolang (Brookhaven National Laboratory)

**Session Classification:** Parallel Session II

Contribution ID: 28

Type: **not specified**

## **DM/Neutrino - Room A - Zee-Burst: Non-Standard Interactions in IceCube**

*Thursday, 26 September 2019 16:40 (20 minutes)*

**Presenter:** SUI, Yicong (Washington University, St. Louis)

**Session Classification:** Parallel Session II

Contribution ID: 29

Type: **not specified**

## **DM/Neutrino - Room A - The Relation Between the Migdal effect and DM-electron Scatterings in Atoms and Semiconductors**

*Thursday, 26 September 2019 17:00 (20 minutes)*

**Presenter:** SHOLAPURKAR, Mukul (Stony Brook University)

**Session Classification:** Parallel Session II

Contribution ID: 30

Type: **not specified**

## **NP Searches/BSM - Room B - Supersymmetric Inflation from the Fifth Dimension**

*Thursday, 26 September 2019 15:40 (20 minutes)*

**Presenter:** DESHPANDE, Kaustubh (University of Maryland)

**Session Classification:** Parallel Session II

Contribution ID: 31

Type: **not specified**

## **NP Searches/BSM - Room B - Di-Higgs, di-boson General Resonance Search and Non-resonant di-Higgs**

*Thursday, 26 September 2019 16:00 (20 minutes)*

**Presenter:** BROST, Elizabeth (Brookhaven National Laboratory)

**Session Classification:** Parallel Session II



Contribution ID: 33

Type: **not specified**

## **NP Searches/BSM - Room B - A Baryogenesis Model to be Tested in the 2020's**

*Thursday, 26 September 2019 16:20 (20 minutes)*

**Presenter:** ALONSO ALVAREZ, Gonzalo (University of Heidelberg)

**Session Classification:** Parallel Session II

Contribution ID: 34

Type: **not specified**

## **NP Searches/BSM - Room B - Higgs Bosons with Large Couplings to Light Quarks**

*Thursday, 26 September 2019 16:40 (20 minutes)*

**Presenter:** HOMILLER, Samuel (YITP, Stony Brook)

**Session Classification:** Parallel Session II

Contribution ID: 35

Type: **not specified**

## **NP Searches/BSM - Room B - Precision Electroweak Measurements**

*Thursday, 26 September 2019 17:00 (20 minutes)*

**Presenter:** ZENG, JianCong (University of Illinois)

**Session Classification:** Parallel Session II

Contribution ID: 36

Type: **not specified**

## **Flavor/CP - Room C - B-flavour Anomalies in $b \rightarrow sll$ and $b \rightarrow clnu$ Transitions at LHCb**

*Thursday, 26 September 2019 15:40 (20 minutes)*

**Presenter:** LOMBA CASTRO, Julian (CERN)

**Session Classification:** Parallel Session II

Contribution ID: 37

Type: **not specified**

## **Flavor/CP - Room C - Addressing the $q^2$ Dependence in B-anomalies**

*Thursday, 26 September 2019 16:00 (20 minutes)*

**Presenter:** HUANG, Peisi (University of Nebraska-Lincoln)

**Session Classification:** Parallel Session II

Contribution ID: 38

Type: **not specified**

## **Flavor/CP - Room C - Anomalies from RK and RK\* at Belle/Belle II**

*Thursday, 26 September 2019 16:20 (20 minutes)*

**Presenter:** NAKAGIRI, Kota (High Energy Accelerator Research Organization (KEK))

**Session Classification:** Parallel Session II

Contribution ID: 39

Type: **not specified**

## **Flavor/CP - Room C - Top Quark Decay at Next-to-leading Order in the Standard Model Effective Field Theory**

*Thursday, 26 September 2019 16:40 (20 minutes)*

**Presenter:** CHEN, Chien-Yi (Brookhaven National Laboratory)

**Session Classification:** Parallel Session II

Contribution ID: 40

Type: **not specified**

## **Flavor/CP - Room C - Theoretical Conservation of Lepton Family and Representation Theories**

*Thursday, 26 September 2019 17:00 (20 minutes)*

**Presenter:** KHAWAJA, Atta-ul-Latif (University of Lahore)

**Session Classification:** Parallel Session II



Contribution ID: 41

Type: **not specified**

## **Present status and Future Outlook of Neutrino Theory**

*Friday, 27 September 2019 09:00 (40 minutes)*

**Presenter:** GONZALEZ-GARCIA, Maria Concepcion (YITP-Stony Brook and ICREA-UB)

**Session Classification:** Plenary Program I

Contribution ID: 42

Type: **not specified**

# Hunting for Dark Matter with Cosmological Observations

*Friday, 27 September 2019 09:40 (40 minutes)*

**Presenter:** DVORKIN, Cora (Harvard)

**Session Classification:** Plenary Program I

Contribution ID: 43

Type: **not specified**

## **DM/Neutrino - Room A - Thermal Relic Targets with Exponentially Small Couplings**

*Friday, 27 September 2019 10:40 (20 minutes)*

**Presenter:** WANG, PoJen (New York University)

**Session Classification:** Parallel Session

Contribution ID: 44

Type: **not specified**

## **DM/Neutrino - Room A - Searches for Dark Matter at ATLAS and CMS**

*Friday, 27 September 2019 11:00 (20 minutes)*

**Presenter:** WU, Zhenbin (University of Illinois)

**Session Classification:** Parallel Session

Contribution ID: 45

Type: **not specified**

## **DM/Neutrino - Room A - Conformal Freeze-In DM**

*Friday, 27 September 2019 11:20 (20 minutes)*

**Presenter:** KURUP, Gowri (Cornell University)

**Session Classification:** Parallel Session

Contribution ID: 46

Type: **not specified**

## **DM/Neutrino - Room A - Implications of Future Large-scale Structure Observations for the Neutrino Mass Sum**

*Friday, 27 September 2019 11:40 (20 minutes)*

**Presenter:** BRINCKMANN, Thejs (Stony Brook University)

**Session Classification:** Parallel Session

Contribution ID: 47

Type: **not specified**

## **DM/Neutrino - Room A - Cosmological Signals of Neutrino Mass and Lifetime**

*Friday, 27 September 2019 12:00 (20 minutes)*

**Presenter:** DU, Peizhi (Stony Brook University)

**Session Classification:** Parallel Session

Contribution ID: 48

Type: **not specified**

## **NP Searches/BSM - Room B - Multistep Strongly First-order Phase from New TeV-scale Fermions**

*Friday, 27 September 2019 10:40 (20 minutes)*

**Presenter:** ANGELESCU, Andrei (Univeristy of Nebraska-Lincoln)

**Session Classification:** Parallel Session



Contribution ID: 49

Type: **not specified**

## **NP Searches/BSM - Room B - Search for BSM Physics using Challenging Signatures (Exotics, Emerging jets, SUSY RPV Searches)**

*Friday, 27 September 2019 11:00 (20 minutes)*

**Presenter:** DALLAPICCOLA, Carlo (University of Massachusetts-Amherst)

**Session Classification:** Parallel Session

Contribution ID: 50

Type: **not specified**

## **NP Searches/BSM - Room B - RS Phase Transition, Fixed Points, and Gravitational Waves**

*Friday, 27 September 2019 11:20 (20 minutes)*

**Presenter:** EKHTERACHIAN, Majid (University of Maryland, College Park)

**Session Classification:** Parallel Session

Contribution ID: 51

Type: **not specified**

## **NP Searches/BSM - Room B - New Signatures of Light Electroweakino Sectors**

*Friday, 27 September 2019 11:40 (20 minutes)*

**Presenter:** TUCKLER, Douglas (University of California Santa Cruz)

**Session Classification:** Parallel Session

Contribution ID: 52

Type: **not specified**

## **NP Searches/BSM - Room B -**

*Friday, 27 September 2019 12:00 (20 minutes)*

**Session Classification:** Parallel Session

Contribution ID: 53

Type: **not specified**

## **Flavor/CP - Room C - Measurements of CPV in b and c Decays at LHCb**

*Friday, 27 September 2019 10:40 (20 minutes)*

**Presenter:** DI CANTO, Angelo (BNL)

**Session Classification:** Parallel Session

Contribution ID: 54

Type: **not specified**

## **Flavor/CP - Room C - Charm CP Violation**

*Friday, 27 September 2019 11:00 (20 minutes)*

**Presenter:** SCHACHT, Stefan (Cornell University)

**Session Classification:** Parallel Session

Contribution ID: 55

Type: **not specified**

## **Flavor/CP - Room C - CPV in B Decays; Results at Belle and Prospects at Belle II**

*Friday, 27 September 2019 11:20 (20 minutes)*

**Presenter:** HSU, Chia-Ling (University of Sydney )

**Session Classification:** Parallel Session

Contribution ID: 56

Type: **not specified**

## **Flavor/CP - Room C - Studying CP Violation in Angular Distributions of Semi-leptonic B Decays**

*Friday, 27 September 2019 11:40 (20 minutes)*

**Presenter:** BHATTACHARYA: , Bhubanjyoti (Lawrence Technological University)

**Session Classification:** Parallel Session



Contribution ID: 57

Type: **not specified**

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*Friday, 27 September 2019 12:00 (20 minutes)*

**Session Classification:** Parallel Session

Contribution ID: 58

Type: **not specified**

## **Long-Baseline Neutrino Experiments**

*Friday, 27 September 2019 13:30 (40 minutes)*

**Presenter:** MARINO, Alysia (U Colorado-Boulder/DUNE)

**Session Classification:** Plenary Program II

Contribution ID: 59

Type: **not specified**

## **On the Present Status and Future Outlook of Astroparticle Physics**

*Friday, 27 September 2019 14:10 (40 minutes)*

**Presenter:** HALZEN, Francis (UW Madison)

**Session Classification:** Plenary Program II

Contribution ID: **60**

Type: **not specified**

## **Closing**

*Friday, 27 September 2019 14:50 (10 minutes)*

**Presenters:** SONI, Amarjit (Brookhaven National Laboratory); DAVOUDIASL, Hooman (Brookhaven National Laboratory)

**Session Classification:** Plenary Program II

Contribution ID: 62

Type: **not specified**

## **Cosmology - Room D - Separate Universe Techniques from High to Low Density**

*Thursday, 26 September 2019 15:40 (20 minutes)*

**Presenter:** JAMIESON, Andrew (Stony Brook University)

**Session Classification:** Parallel Session II

Contribution ID: **63**

Type: **not specified**

## **Cosmology - Room D - Signatures of Mirror Stars**

*Thursday, 26 September 2019 16:00 (20 minutes)*

**Presenter:** SETFORD, Jack (University of Toronto)

**Session Classification:** Parallel Session II

Contribution ID: 64

Type: **not specified**

## **Cosmology - Room D - Exotic Compact Objects in a Dissipative Dark Sector**

*Thursday, 26 September 2019 16:20 (20 minutes)*

**Presenter:** CHANG, Jae Hyeok (Stony Brook University)

**Session Classification:** Parallel Session II

Contribution ID: 65

Type: **not specified**

## **Cosmology - Room D -**

*Thursday, 26 September 2019 16:40 (20 minutes)*

**Session Classification:** Parallel Session II



Contribution ID: **66**

Type: **not specified**

## **Cosmology - Room D -**

*Thursday, 26 September 2019 17:00 (20 minutes)*

**Session Classification:** Parallel Session II