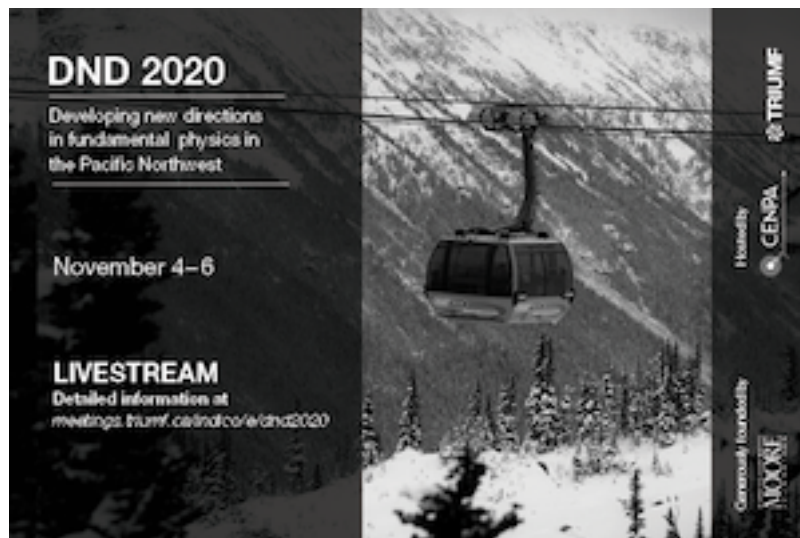


# Developing New Directions in Fundamental Physics (DND) 2020



## Report of Contributions

Contribution ID: 0

Type: **not specified**

## **Probing the Dark Sector with Atoms and Nuclei**

*Wednesday, 4 November 2020 08:30 (30 minutes)*

**Presenter:** RAJENDRAN, Surjeet (Johns Hopkins University)

**Session Classification:** Plenary

Contribution ID: 1

Type: **not specified**

# Experimental Perspectives on Fundamental Physics with Molecules

*Wednesday, 4 November 2020 11:40 (30 minutes)*

**Presenter:** HUTZLER, Nicholas (Caltech)

**Session Classification:** Plenary

Contribution ID: 2

Type: **not specified**

## **TRIUMF Accelerator Capabilities, Present and Future**

*Wednesday, 4 November 2020 09:10 (30 minutes)*

**Presenter:** Prof. KESTER, Oliver (TRIUMF)

**Session Classification:** Plenary

Contribution ID: 3

Type: **not specified**

## The Physics Program at TRIUMF

*Wednesday, 4 November 2020 09:50 (30 minutes)*

An overview is given of the physics portfolio for the on-site and off-site program at TRIUMF.

**Presenter:** Prof. DILLING, Jens (TRIUMF)

**Session Classification:** Plenary

Contribution ID: 4

Type: **not specified**

## **Fundamental physics with molecules: From electric dipole moments to dark matter candidates**

*Wednesday, 4 November 2020 11:00 (30 minutes)*

**Presenter:** BERGER, Robert (Philipps-Universität Marburg)

**Session Classification:** Plenary

Contribution ID: 5

Type: **not specified**

## Exploring Flavor Physics with Pions and Kaons

*Wednesday, 4 November 2020 14:00 (30 minutes)*

**Presenter:** BRYMAN, Douglas (TRIUMF/UBC)

**Session Classification:** Plenary

Contribution ID: 6

Type: **not specified**

## **Tests of lepton flavor universality and CKM unitarity**

*Wednesday, 4 November 2020 13:20 (30 minutes)*

**Presenter:** HOFERICHTER, Martin (Universität Bern)

**Session Classification:** Plenary



Contribution ID: 7

Type: **not specified**

## **EDM prospects: experiments and interpretation**

*Wednesday, 4 November 2020 15:10 (30 minutes)*

**Presenter:** CHUPP, Tim (University of Michigan)

**Session Classification:** Plenary

Contribution ID: 8

Type: **not specified**

## **Beyond the Standard Model Across the Spectra**

*Wednesday, 4 November 2020 15:50 (30 minutes)*

**Presenter:** BARYAKHTAR, Masha (University of Washington/NYU)

**Session Classification:** Plenary

Contribution ID: 9

Type: **not specified**

## **The physics of lepton flavor universality and CKM unitarity**

*Thursday, 5 November 2020 09:00 (30 minutes)*

**Presenter:** CIRIGLIANO, Vincenzo (Los Alamos National Laboratory)

**Session Classification:** WG: Pions, muons, ...

Contribution ID: **10**

Type: **not specified**

## **The MEG II experiment and a new idea for the precision test on LUV with the LXe detector**

*Thursday, 5 November 2020 09:30 (30 minutes)*

**Primary author:** Dr IWAMOTO, Toshiyuki (The University of Tokyo)

**Presenter:** Dr IWAMOTO, Toshiyuki (The University of Tokyo)

**Session Classification:** WG: Pions, muons, ...

Contribution ID: 11

Type: **not specified**

## **Fast silicon detector technologies for 4D tracking in future HEP experiments**

*Thursday, 5 November 2020 10:00 (30 minutes)*

**Primary author:** Dr MAZZA, Simone Michele (UC Santa Cruz)

**Presenter:** Dr MAZZA, Simone Michele (UC Santa Cruz)

**Session Classification:** WG: Pions, muons, ...

Contribution ID: 12

Type: **not specified**

## Discussion

*Thursday, 5 November 2020 10:30 (15 minutes)*

**Session Classification:** WG: Pions, muons, ...

Contribution ID: 13

Type: **not specified**

## **Lessons learned from the PiBeta and PEN experiments**

*Thursday, 5 November 2020 11:00 (30 minutes)*

**Primary author:** Prof. POCANIC, Dinko (University of Virginia)

**Presenter:** Prof. POCANIC, Dinko (University of Virginia)

**Session Classification:** WG: Pions, muons, ...

Contribution ID: 14

Type: **not specified**

## Lessons learned from PIENU

*Thursday, 5 November 2020 11:30 (30 minutes)*

**Primary author:** Dr TRISTAN, Sullivan (University of Victoria)

**Presenter:** Dr TRISTAN, Sullivan (University of Victoria)

**Session Classification:** WG: Pions, muons, ...



Contribution ID: 15

Type: **not specified**

## **Pion and muon beams at PSI, performance and plans**

*Thursday, 5 November 2020 12:00 (30 minutes)*

**Primary author:** KNECHT, Andreas (Paul Scherrer Institut)

**Presenter:** KNECHT, Andreas (Paul Scherrer Institut)

**Session Classification:** WG: Pions, muons, ...

Contribution ID: **16**

Type: **not specified**

## Discussion

*Thursday, 5 November 2020 12:30 (15 minutes)*

**Session Classification:** WG: Pions, muons, ...

Contribution ID: **19**

Type: **not specified**

## **Beta Decay overview and future**

*Thursday, 5 November 2020 14:30 (30 minutes)*

**Presenter:** HAYEN, Leendert (North Carolina St.)

**Session Classification:** WG: New Physics with Radioactives

Contribution ID: 20

Type: **not specified**

## **Fierz term from Cyclotron Resonance Electron Spectroscopy**

*Thursday, 5 November 2020 15:00 (30 minutes)*

**Presenter:** GRANER, Brent (University of Washington)

**Session Classification:** WG: New Physics with Radioactives

Contribution ID: 21

Type: **not specified**

# Superconducting Quantum Sensors and Tests of Quantum Mechanics

*Thursday, 5 November 2020 14:00 (20 minutes)*

**Presenter:** Dr CHEN, Weijian (Washington University in St Louis)

**Session Classification:** WG: New Technologies and Techniques

Contribution ID: 22

Type: **not specified**

## **Tabletop experiments for quantum gravity**

*Thursday, 5 November 2020 14:30 (20 minutes)*

**Presenter:** Dr CARNEY, Dan (University of Maryland/Fermilab)

**Session Classification:** WG: New Technologies and Techniques

Contribution ID: 23

Type: **not specified**

## **Atomic clocks for fundamental physics**

*Thursday, 5 November 2020 15:00 (20 minutes)*

**Presenter:** Dr YE, Jun (JILA/NIST/University of Colorado)

**Session Classification:** WG: New Technologies and Techniques

Contribution ID: 24

Type: **not specified**

## **Dark matter searches with accelerometers**

*Thursday, 5 November 2020 15:50 (20 minutes)*

**Presenter:** Prof. GUNDLACH, Jens (University of Washington)

**Session Classification:** WG: New Technologies and Techniques



Contribution ID: 25

Type: **not specified**

## **Atom Interferometry for Fundamental Physics**

*Thursday, 5 November 2020 16:20 (20 minutes)*

**Presenter:** Dr PANDA, Cristian (University of California Berkeley)

**Session Classification:** WG: New Technologies and Techniques

Contribution ID: 26

Type: **not specified**

## Laboratory neutrino mass measurements

*Thursday, 5 November 2020 16:50 (20 minutes)*

**Presenter:** Dr NOVITSKI, Elise (Center for Experimental Nuclear Physics and Astrophysics, University of Washington)

**Session Classification:** WG: New Technologies and Techniques

Contribution ID: 27

Type: **not specified**

## **Beyond Standard Model Neutrino Studies with Rare Isotopes in Quantum Sensors**

*Thursday, 5 November 2020 15:50 (30 minutes)*

**Presenter:** LEACH, Kyle (Colorado School of Mines)

**Session Classification:** WG: New Physics with Radioactives

Contribution ID: 28

Type: **not specified**

## **New techniques for precision measurements on simple atoms/molecules**

*Thursday, 5 November 2020 17:20 (10 minutes)*

**Presenter:** Dr FUJIWARA, Makoto (TRIUMF)

**Session Classification:** WG: New Technologies and Techniques

Contribution ID: 29

Type: **not specified**

## **Additional Discussion Time**

*Thursday, 5 November 2020 17:40 (20 minutes)*

**Session Classification:** WG: New Technologies and Techniques

Contribution ID: 30

Type: **not specified**

## **Generalized King linearity and new physics searches with isotope shifts**

*Thursday, 5 November 2020 16:20 (30 minutes)*

**Presenter:** BERENGUT, Julian (University of New South Wales)

**Session Classification:** WG: New Physics with Radioactives

Contribution ID: **31**

Type: **not specified**

## Summary and Outlook

*Friday, 6 November 2020 09:00 (20 minutes)*

**Presenters:** Dr RITZ, Adam (University of Victoria); Dr FRANKE, Beatrice (TRIUMF)

**Session Classification:** WG: New ideas to probe fundamental physics with nucleons and molecules (EDMs, precision measurements, etc.)

Contribution ID: 32

Type: **not specified**

## Summary and Outlook

*Friday, 6 November 2020 10:00 (20 minutes)*

**Presenter:** Prof. RYBKA, Gray (University of Washington)

**Session Classification:** WG: New Technologies and Techniques



Contribution ID: 33

Type: **not specified**

## Summary and Outlook

*Friday, 6 November 2020 09:30 (20 minutes)*

**Presenters:** Prof. HERTZOG, David (University of Washington); Prof. KAMMEL, Peter (UW and CENPA, Seattle)

**Session Classification:** WG: Pions, muons, ...

Contribution ID: 34

Type: **not specified**

## Summary and Outlook

*Friday, 6 November 2020 11:00 (20 minutes)*

**Presenters:** GARCIA, Alejandro (University of Washington); BEHR, John (TRIUMF)

**Session Classification:** WG: New Physics with Radioactives

Contribution ID: 35

Type: **not specified**

## Summary and Outlook

*Friday, 6 November 2020 11:30 (20 minutes)*

**Presenter:** MCKEEN, David (TRIUMF)

**Session Classification:** WG: E-Linac Opportunities

Contribution ID: **36**

Type: **not specified**

## **Electron beams and new physics**

*Thursday, 5 November 2020 14:00 (30 minutes)*

**Presenter:** BATELL, Brian (University of Pittsburgh)

**Session Classification:** WG: E-Linac Opportunities

Contribution ID: 37

Type: **not specified**

## **Electron beam dump experiments**

*Thursday, 5 November 2020 14:30 (30 minutes)*

**Presenter:** Dr DORIA, Luca (TRIUMF)

**Session Classification:** WG: E-Linac Opportunities

Contribution ID: **38**

Type: **not specified**

## **The DarkLight experiment**

*Thursday, 5 November 2020 16:00 (30 minutes)*

**Presenter:** BERNAUER, Jan (Stony Brook University)

**Session Classification:** WG: E-Linac Opportunities

Contribution ID: 39

Type: **not specified**

## **Electron beams and missing momentum**

*Thursday, 5 November 2020 16:30 (30 minutes)*

**Presenter:** BLINOV, Nikita (Fermilab)

**Session Classification:** WG: E-Linac Opportunities

Contribution ID: 40

Type: **not specified**

**TBA**

**Presenter:** CAIRNCROSS, Will (Department of Chemistry and Chemical Biology, Harvard University)



Contribution ID: 41

Type: **not specified**

## **Assembling and disassembling molecules for quantum science and precision measurement**

*Thursday, 5 November 2020 09:45 (20 minutes)*

**Presenter:** Dr CAIRNCROSS, Will (Department of Chemistry and Chemical Biology, Harvard University)

**Session Classification:** WG: New ideas to probe fundamental physics with nucleons and molecules (EDMs, precision measurements, etc.)

Contribution ID: 42

Type: **not specified**

## Introduction

*Thursday, 5 November 2020 09:00 (10 minutes)*

**Presenter:** RITZ, Adam (University of Victoria)

**Session Classification:** WG: New ideas to probe fundamental physics with nucleons and molecules (EDMs, precision measurements, etc.)

Contribution ID: 43

Type: **not specified**

## **EDMs and molecules: state of the art and prospects for rapid improvements in hadronic and leptonic CP violation**

*Thursday, 5 November 2020 09:10 (35 minutes)*

**Presenter:** Prof. DEMILLE, Dave

**Session Classification:** WG: New ideas to probe fundamental physics with nucleons and molecules (EDMs, precision measurements, etc.)

Contribution ID: 44

Type: **not specified**

## Discussion

*Thursday, 5 November 2020 10:25 (30 minutes)*

**Session Classification:** WG: New ideas to probe fundamental physics with nucleons and molecules (EDMs, precision measurements, etc.)

Contribution ID: 45

Type: **not specified**

## **Extending the reach of fundamental symmetries research with beta decay and measurements with polarized ultracold neutrons**

*Thursday, 5 November 2020 11:20 (35 minutes)*

**Presenter:** Prof. YOUNG, Albert

**Session Classification:** WG: New ideas to probe fundamental physics with nucleons and molecules (EDMs, precision measurements, etc.)

Contribution ID: 46

Type: **not specified**

## **Probing for BSM physics through Precision Measurements of the Neutron Lifetime and the Neutron Electric Dipole Moment**

*Thursday, 5 November 2020 11:55 (35 minutes)*

**Presenter:** Prof. LIU, Chen-Yu

**Session Classification:** WG: New ideas to probe fundamental physics with nucleons and molecules (EDMs, precision measurements, etc.)

Contribution ID: 47

Type: **not specified**

## Discussion

*Thursday, 5 November 2020 12:30 (30 minutes)*

**Primary author:** Prof. MARTIN, Jeffery (The University of Winnipeg)

**Session Classification:** WG: New ideas to probe fundamental physics with nucleons and molecules (EDMs, precision measurements, etc.)

Contribution ID: 48

Type: **not specified**

## **Probing Physics Beyond the Standard Model with the JILA eEDM Experiment**

*Thursday, 5 November 2020 10:05 (20 minutes)*

**Presenter:** NG, Kia Boon (JILA, University of Colorado, Boulder)

**Session Classification:** WG: New ideas to probe fundamental physics with nucleons and molecules (EDMs, precision measurements, etc.)



Contribution ID: 49

Type: **not specified**

## **Novel methods required to link the RIB and AMO techniques for future BSM physics studies**

*Thursday, 5 November 2020 14:00 (30 minutes)*

**Presenter:** ETTENAUER, Stephan (CERN)

**Session Classification:** WG: New Physics with Radioactives

Contribution ID: 50

Type: **not specified**

## Outlook and closing remarks

*Friday, 6 November 2020 12:00 (15 minutes)*

**Presenter:** Prof. DILLING, Jens (TRIUMF)

**Session Classification:** Closing Remarks & Future Charge