

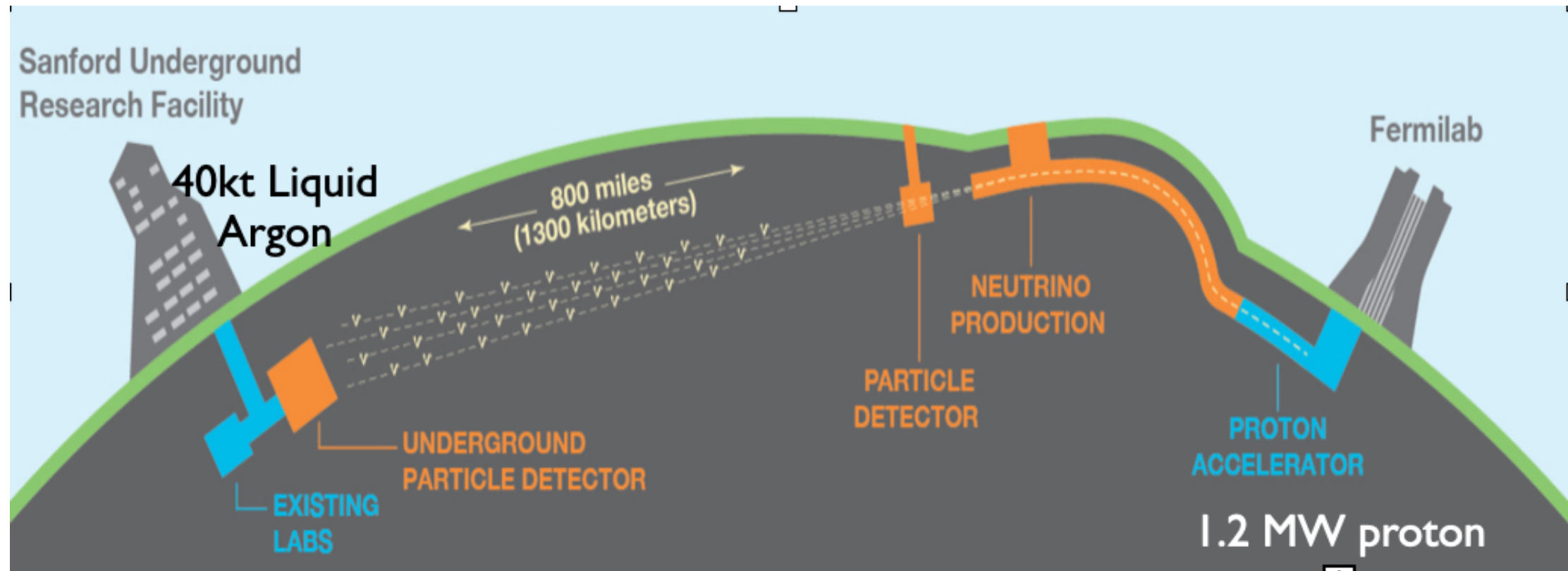
Introducing the DUNE-related posters at K-Neutrino 2025

Mehedi Masud
Chung-Ang University
Seoul, Korea



June, 2025
Chung-Ang University, Seoul, Korea

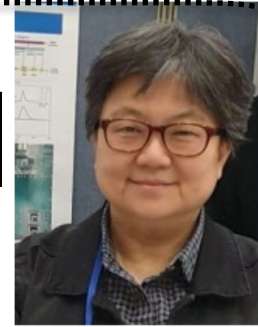
Deep Underground Neutrino Experiment (DUNE)



DUNE Posters

Kim Siyeon

1. DUNE overview



Computing
/Software

Hardware
/Experiment

Phenomenology
/Theory

Yujin Park

2. Wirecell
introduction



Hokyeong Nam

3. Machine learning
& signal processing



Suhyeon Kim

4. Cold
electronics



Juseong Park

5. Water based
liquid scintillator



Suhyeon Kim

6. Large Extra
Dimension



Nishat Fiza

7. ν from EIC



Mehedi Masud

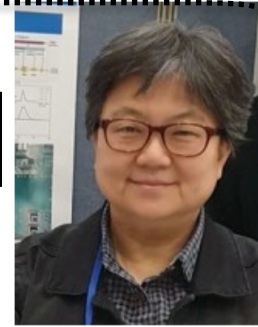
8. THEIA/DUNE
comparison



DUNE Posters (1. Kim Siyeon)

Kim Siyeon

1. DUNE overview

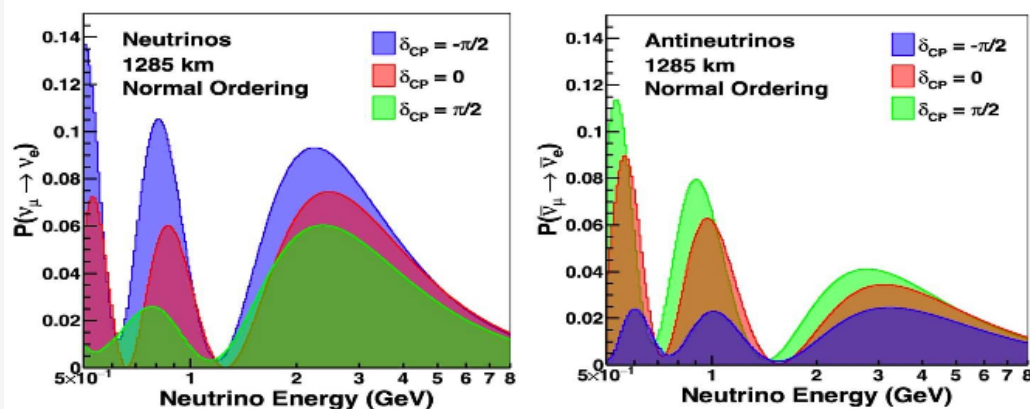


Deep Underground Neutrino Experiment

KIM SIYEON¹

(¹Neutrino Lab (NULA), Department of Physics, Chung-Ang University)

CP Violation



- What is DUNE?
- Physics Goals?
- Detectors
- Sensitivities
- Korea DUNE activities

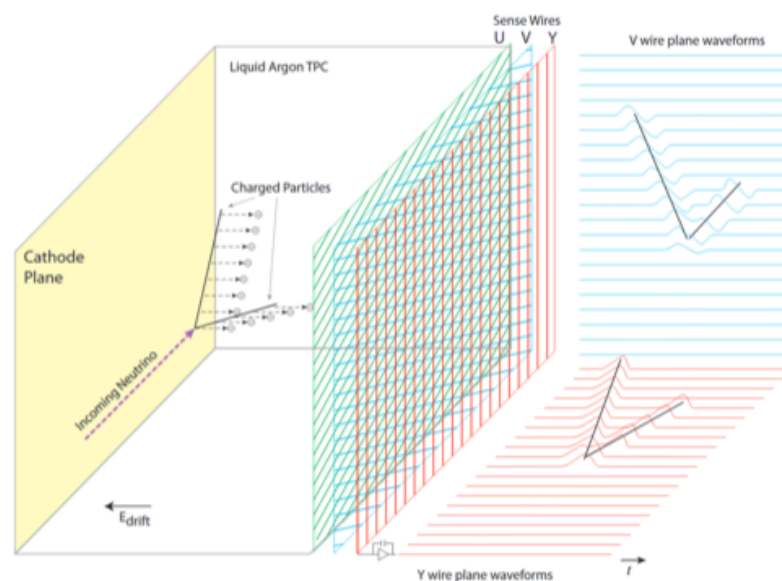
DUNE Posters (2. Yujin Park)

Computing
/Software

DUNE Reconstruction Tool *Wire-Cell* : Introduction to Framework

Yujin Park¹

(¹Department of Physics, Chung-Ang University)



Yujin Park

2. Wirecell
introduction



Hokyeong Nam

3. Machine learning
& signal processing



- Event reconstruction at DUNE
- Wirecell toolkit
- Signal processing
- 3d track reconstruction (imaging)

DUNE Posters (3. Hokyeong Nam)

Kim Siyeon
1. DUNE overview

Computing
/Software

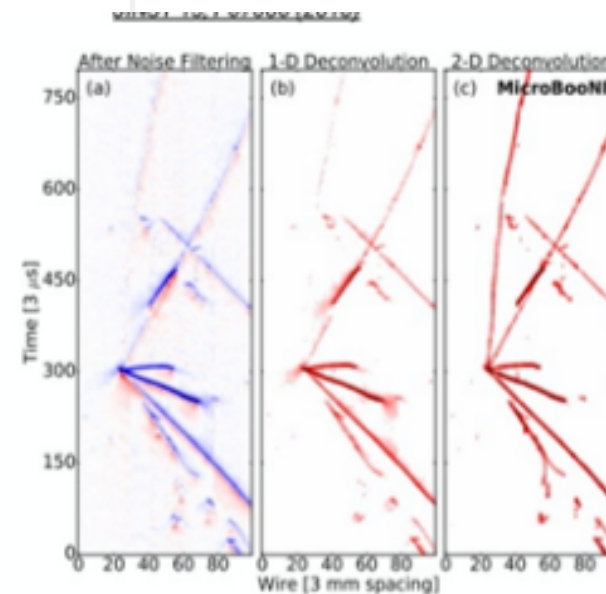
Optimizing ML-Based Signal Processing for DUNE

Hokyeong Nam¹
(¹Department of Physics, Chung-Ang University)

Yujin Park
2. Wirecell
introduction



Suhyeon Kim
4. Cold
electronics



Siyeon Kim
Signal Extra
ction

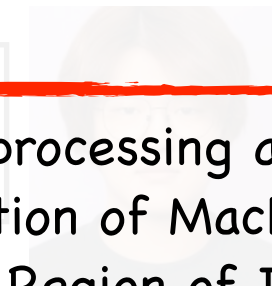


Yat Fiza
m EIC



Juseong Park

5. Water-based
liquid cint



Mehdi Masud
8. THE DUNE
comparison



Hokyeong Nam
3. Machine learning
& signal processing



- Signal processing at Wirecell and workflow
- Application of Machine learning tools
- Finding Region of Interest using DNNROI

DUNE Posters (4. Suhyeon Kim)

Quality Control and Performance Evaluation of Cold Electronics for the DUNE Far Detector

NAM Hokyong¹, MASUD Mehedi¹, and KIM Suhyeon¹
(¹Department of Physics, Chung-Ang University)

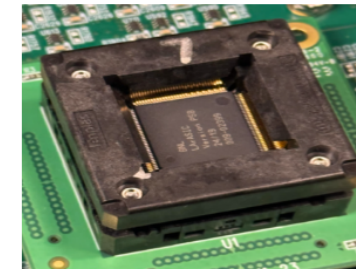
Computing
/Software

Hardware
/Experiment

❖ COLDATA



❖ LArASIC



❖ FEMB



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5. Water based
liquid scintillator



6. Large Extra
Dimension

- Quality control of key components of data readout system
- Testing done in cryogenic systems using both human labour and robotic labour
- Determination of selection criteria for high quality components

DUNE Posters (5. Juseong Park)

DUNE 4th module prototype WbLS

PARK Juseong¹

(¹Department of Physics, Chung-Ang University)

Computing
/Software

Hardware
/Experiment



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- WbLS detector for DUNE FD module
- Trigger system & PMT calibration using 1t and 30t WbLS detector at BNL
- WbLS technology for future experiments

DUNE Posters (6. Suhyeon Kim)

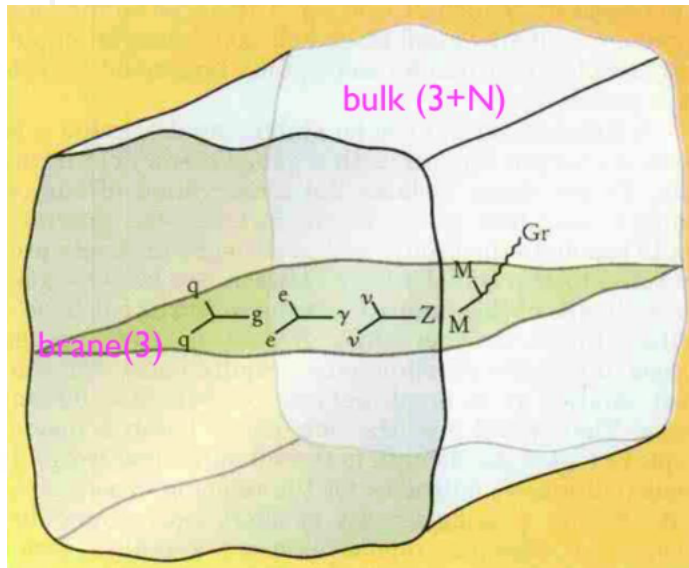
Probing Large Extra Dimension at DUNE using Beam Tunes

Suhyeon Kim

Chung-Ang University

Collaboration with Masud, Juseong and Siyeon

Published in JHEP 11(2024, 141), pp. 1–28



- Briefly discuss LED phenomenology
- Probing LED using DUNE
- Improving constraints using higher energy beams

Phenomenology
/Theory

Suhyeon Kim

6. Large Extra
Dimension



Nishat Fiza

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Mehedi Masud

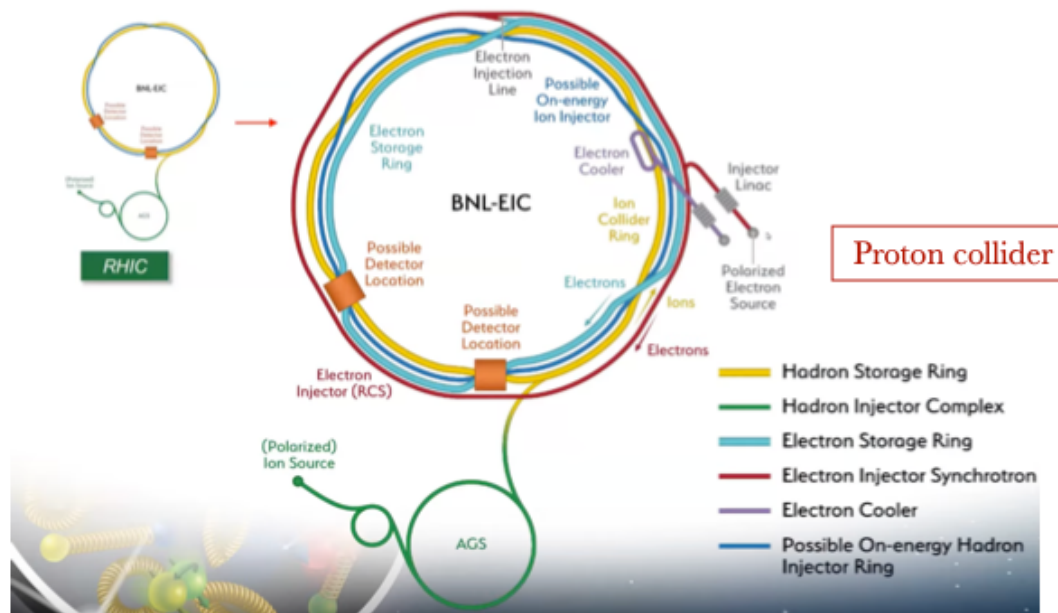
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comparison



DUNE Posters (7. Nishat Fiza)

Neutrino Oscillation Prospects with a Dual-Baseline Beam from BNL to SNOLAB and DUNE

Nishat Fiza (Chung-Ang University), Mehedi Masud (Chung-Ang University), Kim Siyeon (Chung-Ang University), Guang Yang (Brookhaven National Laboratory)



- Overview of Electron-Ion collider (EIC)
- Production of ν flux at EIC
- Analysis of ν from EIC at DUNE FD and at SNOLAB

Phenomenology
/Theory

Suhveon Kim

6. Large Extra Dimension



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7. ν from EIC



Mehedi Masud

8. THEIA/DUNE comparison



DUNE Posters (8. Mehedi Masud)

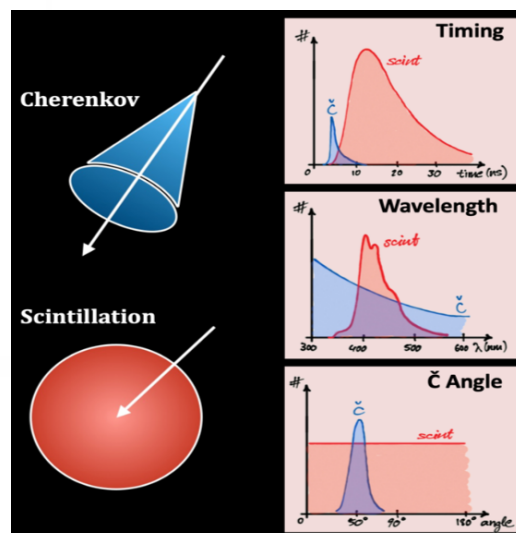
Comparing the physics capabilities of a liquid argon detector and a water based liquid scintillator at DUNE

Kim Siyeon¹, Nishat Fiza¹, Suhyeon Kim¹, Emar Masaku¹,
Mehedi Masud¹, Hokyeong Nam¹, Juseong Park¹, Yujin Park¹

¹ Chung-Ang University, Seoul, Korea

K-Ne

Phenomenology
/Theory

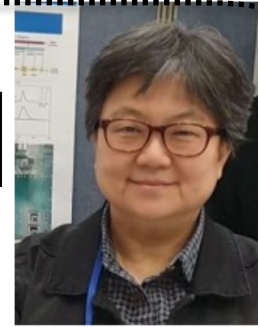


- DUNE FD module 4 (LArTPC or WbLS?)
- Estimating exclusion contours
- Analysis of parameter reconstruction and precisions

DUNE Posters

Kim Siyeon

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Thank You!

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