

Introduction to Working Group 5 “Beyond PMNS”

WG Conveners

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THE 21ST INTERNATIONAL WORKSHOP ON NEUTRINOS FROM ACCELERATORS
August 26 - August 31, 2019
The Grand Hotel, Daegu, KOREA

Key Questions for WGG5

- Some key questions and topics we are trying to explore:
 - What is the origin of the neutrino masses ?
 - What is the nature of dark matter ?
 - Are there sterile neutrinos ?
 - Unitarity of the PMNS matrix and non-standard interactions

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- Working Group 5 was created in 2016
- We try to cover experimental and theoretical works
 - 2 conveners from theory / 1 convener experimentalist
- This is our first time

Topics of WG5- Beyond PMNS:

- BSM physics and non-standard interactions (NSI)
 - Neutrino Beams (DUNE, Hyper-K (+2nd detector in Korea), ...)
 - Neutrino Telescopes (IceCube, ANTARES, ORCA, IceCube Upgrade, ...)
- Non-unitarity of the PMNS matrix and theoretical models beyond PMNS
- Searches for sterile neutrinos with oscillation experiments
 - Including searches at reactors, beam dump and beam line experiments, as well as with neutrino telescopes.
 - Many competing experiments to check hints from reactors and the LNSD anomalies; A series of new results are coming out or expected

Topics of WG5- Beyond PMNS:

- Sterile Neutrino Searches
 - A series of new experiments to ultimately test the LSND anomaly (SBN, JSNS², ...)
 - Searches with Reactor Neutrinos
 - Searches with Atmospheric Neutrinos
 - including joined session with WG I
- Neutrino Telescopes provide new opportunities to search for BSM physics and have provided precision measurements

Topics of WG5- Beyond PMNS:

- Synergy of the field - theory, experiment, collider, ...
- Dark sector and dark matter searches at neutrino experiments
- Search for new Physics in beam dump experiments
 - SHIP, JSNS2, NA62, ...

Tuesday (WG5 Session 1)

14:00-14:25	Federico Scutti	Search for heavy neutrinos with the ATLAS detector
14:25-14:50	Si Hyun Jeon	Tests of neutrino mass models at CMS
14:50-15:15	Yu Seon Jeong	Prompt tau neutrinos at the LHC
15:15-15:40	Osamu Sato	Study of tau-neutrino production at the CERN SPS

Tuesday (WG5 Session 2)

16:00-16:25	Paschal Coyle	Neutrino Oscillation measurements and BSM physics searches with Neutrino Telescopes in the Mediterranean
16:25-16:50	Tom Stuttard	Neutrino oscillations and PMNS unitarity with IceCube/DeepCore and the IceCube Upgrade
16:50-17:15	Phillip Litchfield	Prospects for BSM physics searches and NSI at Hyper-K and T2HKK
17:15-17:40	Alan Bross	Neutral Current events and new physics at nuSTORM

Thursday (WG5 Session 3)

11:00-11:30	Mathieu Perrin-Terrin	Search for exotic decays with NA62
11:30-12:00	Chunsil Yoon	Neutrino physics with the SHiP experiment at CERN
12:00-12:30	Kihyeon Cho	BSM at DUNE

Thursday (WG5 Session 4)

14:00-14:30	Raymond Volkas	Radiative neutrino mass models and the flavour anomalies
14:30-15:00	Giovanni Gallucci	Status of the HOLMES experiment to directly measure the electron neutrino mass with a calorimetric approach.
15:00-15:30	Kang Young Lee	New physics searches with SHIP

Thursday (WG5 Session 5)

16:00-16:30	Shao-Feng Ge	New Physics and the Leptonic CP Phase Measurement
16:30-17:00	Dukjae Jang	Sterile Neutrinos in Astrophysical Environments : Big Bang Nucleosynthesis and Supernova Neutrino Process
17:00-17:30	Juan Antonio Aguilar Sánchez	Search for Dark Matter and BSM Physics with the IceCube Neutrino Observatory

Friday (WG5 Session 6)

14:00-14:30	Yoomin Oh	Reactor short baseline neutrino experiments including NEOS
14:30-15:00	Jaehoon Yu	Sterile neutrino searches with the ICARUS detector
15:00-15:30	Mark Ross-Lonergan	Status of the MicroBooNE Low-energy Excess Search

Friday (WG1+WG5 Session)

16:00-16:25	Stephen Robert Dennis	Status of SBND
16:25-16:50	Fumihiko Suekane	Status of JSNS2 experiment
16:50-17:15	Adam Jude Aurisano	Sterile Neutrinos search via NC disappearance at NOvA
17:15-17:40	Joshua Hignight	Sterile Neutrino Searches with IceCube

- Plenary talks (strongly related to WG5):
 - Monday
 - Short baseline neutrino experiment (Joshua Spitz)
 - Tuesday
 - MiniBooNE & MicroBooNE (Adrien Hourlier)
 - Sterile neutrino search from disappearance measurements at Daya Bay and MINOS/MINOS+ (Adam Jude Aurisano)

- Plenary talks (strongly related to WG5):
 - Wednesday
 - The current status KEK and J-PARC accelerators for neutrino experiments (Yoichi Sato)
 - Search results on lepton number violation at the LHC (Hwi Dong Yoo)
 - Thursday
 - Physics beyond PMNS (Takehiko Asaka)
 - Friday
 - DUNE (Jae Yu)
 - Hyper-Kamiokande (Takashi Kobayashi)
 - KNO report (Intae Yu)

- We have set up a diverse program of topics that search for Physics Beyond the PMNS
- Plenary talks will provide summaries of the latest developments in the field and its current state. They further will explore upcoming challenges and opportunities
- Parallel sessions will give in depths reviews of theoretical and experimental works and offer opportunities for discussions
- We invite everybody to attend our sessions and hope for lively discussions during and after the workshop