

# NuInt 17: 11th International Workshop on Neutrino-Nucleus Scattering in the Few-GeV Region

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Fields Institute



## Book of Abstracts



# Contents

|  |   |
|--|---|
| Welcome . . . . .  | 1 |
| Welcome from Organizers . . . . .  | 1 |
| NuSTEC status . . . . .  | 1 |
| Highlights from the NuSTEC Newsletter . . . . .  | 1 |
| Neutrino interactions outside the oscillation program . . . . .  | 1 |
| Elementary Amplitudes . . . . .  | 1 |
| Nuclear cross sections in the quasi-elastic peak . . . . .   | 1 |
| Impact on Oscillation Analyses . . . . .   | 2 |
| NOvA: Impact of cross section uncertainties in the oscillation analysis . . . . .  | 2 |
| T2K: Impact of Cross Section uncertainties on the oscillation analysis . . . . .   | 2 |
| Systematics related to $q_0$ - $q_3$ determination . . . . .   | 2 |
| $\nu_e/\nu_\mu$ cross section differences and their impact on oscillation analyses . . . . .                                       | 2 |
| DIS Ratio measurement from MINERvA . . . . .   | 2 |
| $\bar{\nu}_\mu/\nu_\mu$ Ratio measurement at MINERvA . . . . .   | 2 |
| MicroBooNE Overview . . . . .  | 3 |
| Muon neutrino inclusive CC cross section measurement on carbon and carbon/oxygen ratio<br>at T2K . . . . .                         | 3 |
| Current and future measurements with electron neutrinos and electron anti-neutrinos in<br>the T2K off-axis near detector . . . . . | 3 |
| Inclusive $\nu_\mu$ and $\nu_e$ CC measurements at NOvA . . . . .  | 3 |
| Global analysis from DIS to the small- $Q^2$ region . . . . .  | 3 |
| Nuclear medium effects on structure functions . . . . .  | 3 |
| Global analysis of nuclear PDFs . . . . .  | 4 |
| Hadron production overview . . . . .   | 4 |

|  |   |
|--|---|
| The DUNE Flux Prediction . . . . .   | 4 |
| The NuMI Flux Prediction . . . . .   | 4 |
| The T2K Flux Prediction . . . . .  | 4 |
| Future Hadron Production Measurements . . . . .  | 4 |
| Enubet . . . . .   | 4 |
| Electron scattering with ab initio approaches . . . . .  | 5 |
| Electron scattering with the Super Scaling Approach . . . . .                                  | 5 |
| Pion Photoproduction . . . . .   | 5 |
| Short Range Correlations in Heavy Nuclei . . . . .   | 5 |
| Determination of the axial mass parameter and proton charge radius . . . . .                   | 5 |
| R ratio measurements from JLAB . . . . .   | 5 |
| Measurement of the Spectral Function of $^{40}\text{Ar}$ . . . . .                             | 6 |
| Pion scattering and secondary interactions . . . . .   | 6 |
| Pion scattering at LArIAT . . . . .  | 6 |
| Pion production at the nucleon level: resonances and continuum . . . . .                       | 6 |
| Pion Production at the Nucleon Level . . . . .   | 6 |
| Pion production at the nucleon level: from low to high $W$ . . . . .                           | 7 |
| Nuclear Effects in Pion Production/Resonance Region . . . . .                                  | 7 |
| Analysis of bubble chamber data on neutrino-induced pion production off the deuteron . . . . . | 7 |
| Pion production measurements at T2K . . . . .  | 7 |
| Pion production measurements at MINERvA . . . . .  | 7 |
| Pion production measurements at NOvA . . . . .   | 7 |
| ArgoNeuT Charged single pion production measurement . . . . .                                  | 7 |
| Neutrino event generator status . . . . .  | 8 |
| Status of the NuWRO event generator . . . . .  | 8 |
| Status of Genie event generator . . . . .  | 8 |
| Status of Neut event generator . . . . .   | 8 |
| Status of GiBUU . . . . .  | 8 |
| NUISANCE . . . . .   | 8 |
| PYTHIA . . . . .   | 8 |

|  |    |
|--|----|
| Neutrino charged current pionless cross section measurements from T2K . . . . .          | 9  |
| Neutrino charged current pionless cross section measurements from MINERvA (I) . . . . .  | 9  |
| Neutrino charged current pionless cross section measurements from MINERvA (II) . . . . . | 9  |
| Validation of neutrino energy estimation using electron scattering . . . . .             | 9  |
| Correlations in quasielastic-like neutrino-nucleus interactions . . . . .                | 9  |
| Weak quasi-elastic production of single hyperons from nucleons and nuclei . . . . .      | 9  |
| SBND . . . . .   | 10 |
| The DUNE Near Detector . . . . .   | 10 |
| High Pressure TPC R&D . . . . .  | 10 |
| J-PARC Intermediate Water Cherenkov Detector . . . . .                                   | 10 |
| ANNIE . . . . .  | 10 |
| NINJA . . . . .  | 10 |
| T2K ND280 upgrade . . . . .  | 11 |
| WAGASCI . . . . .  | 11 |
| The CERN Neutrino Platform . . . . .   | 11 |
| Low Energy Neutrino Experiment Overview . . . . .  | 11 |
| Supernova Fluxes . . . . .   | 11 |
| The COHERENT Experiment . . . . .  | 11 |
| Neutrino measurements relevant to gA quenching . . . . .                                 | 11 |
| Low energy argon cross section simulations . . . . .                                     | 12 |
| Argon cross section measurements . . . . .   | 12 |
| Poster Session Winner 1 . . . . .  | 12 |
| Poster Session Winner 2 . . . . .  | 12 |
| Experimental Summary . . . . .   | 12 |
| Theoretical Summary . . . . .  | 12 |
| Outlook to 2020 . . . . .  | 12 |
| ARAPUCA light trap for large liquid argon time projection chambers . . . . .             | 13 |
| NEUT update . . . . .  | 13 |
| R Ratio Measurements from Jlab . . . . .   | 13 |
| Gd-relevant measurements . . . . .   | 14 |

|   |    |
|---|----|
| Systematics in Neutrino Oscillation Experiments . . . . .   | 14 |
| announcement . . . . .  | 14 |
| NuSTEC . . . . .  | 14 |
| announcement . . . . .  | 14 |
| poster presentation . . . . .   | 15 |
| Production and radiative decay of heavy neutrinos at the Booster Neutrino Beam . . . .  | 15 |
| Analyzing the nuclear recoil system in neutrino-nucleus reactions . . . . .   | 15 |
| Multinucleon Excitation (2p2h) Model Comparison . . . . .   | 15 |
| $\nu_{\mu}$ CC-0 $\pi$ Interactions on Lead in the Near Detector of the T2K Experiment . . .  | 15 |
| Constraining The T2K Neutrino Flux with NA61/SHINE Replica Target Data . . . . .  | 15 |
| NuPRISM detector performance and optimization study . . . . .   | 15 |
| Measurement of gamma rays from giant resonances of $^{16}\text{O}$ and $^{12}\text{C}$ with application to<br>supernova neutrino detection. . . . . | 16 |
| Investigations of Cross Section Model and Near Detector Choices for DUNE. . . . .   | 16 |
| Electron neutrino quasi elastic scattering in Minerva . . . . .   | 16 |
| Modeling gamma-rays from the thermal neutron capture on gadolinium based on JPARC-<br>ANNRI data . . . . .  | 16 |
| Progress of the Measurement of the Electron Neutrino Charged-current Inclusive Cross<br>Section in NOvA . . . . .                                   | 16 |
| An Inclusive Neutral Pion Production in Charged Current Muon Neutrinos Analysis at the<br>NOvA Near Detector . . . . .                              | 16 |
| NOvA tuning of the GENIE generator using internal and external data constraints . . . .   | 17 |
| Measurement of Neutral Current Coherent $\Pi_0$ Production In The NOvA Near Detector .  | 17 |
| MINERvA Model to Describe (Anti)Neutrino-Nucleon Scattering . . . . .   | 17 |
| Measurement of Neutrino Induced Resonance Pion Production in the NOMAD Detector   | 17 |
| Measurement of Muon Neutrino Quasi-Elastic-Like Scattering in MINERvA at $E_{\nu} \sim 6$ GeV   | 17 |
| Hadron Production Measurements with a Hybrid Emulsion/Electronic Detector . . . . .   | 17 |
| Measurement of Deep Inelastic Scattering Cross Section in the MINERvA Detector . . .  | 17 |
| Measurement of gamma ray production from a neutron beam on water . . . . .  | 18 |
| Identification of nuclear effects in CCQE-like neutrino-hydrocarbon interactions using trans-<br>verse kinematic imbalances . . . . .               | 18 |
| Controlling uncertainties in the Short Baseline Neutrino program . . . . .  | 18 |

|   |    |
|---|----|
| Improvements to the Pion Secondary Interaction Systematic Uncertainties at T2K . . . . .                | 18 |
| Tackling the Neutrino Oscillation Problem . . . . .   | 18 |
| Quasi-elastic neutrino-argon scattering in a CRPA approach . . . . .                                    | 18 |
| Hadronic interaction measurements with the Hybrid Emulsion Detector . . . . .                           | 19 |
| Techniques for a Combined Neutrino Flux and Cross Section Unfolding . . . . .                           | 19 |
| Investigation of multi-nucleon effects and neutron counting in antineutrino-carbon reactions. . . . .   | 19 |
| Neutral Current Single Pi0 event rate on water in Pi0 Detector at T2K . . . . .                         | 19 |
| A New Framework To Extract The Electron Anti-neutrinos Cross Section At The T2K Off-Axis Near . . . . . | 19 |
| NUISANCE and single pion production on the nucleon . . . . .  | 19 |
| Progress of the Charged Pion Semi-Inclusive Neutrino Charged-Current Cross Section in NOvA . . . . .    | 20 |





**Welcome and Introductory Talks / 67**

## **Welcome**

**Welcome and Introductory Talks / 68**

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**Welcome and Introductory Talks / 69**

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**Welcome and Introductory Talks / 70**

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**Theory of Neutrino-Nucleus Scattering / 71**

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**Theory of Neutrino-Nucleus Scattering / 72**

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**Theory of Neutrino-Nucleus Scattering / 73**

## **Nuclear cross sections in the quasi-elastic peak**

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74

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**Systematic Uncertainties and Impact on Oscillation Measurements / 75**

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**Systematic Uncertainties and Impact on Oscillation Measurements / 76**

## **T2K: Impact of Cross Section uncertainties on the oscillation analysis**

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**Systematic Uncertainties and Impact on Oscillation Measurements / 77**

## **Systematics related to q0-q3 determination**

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**Systematic Uncertainties and Impact on Oscillation Measurements / 78**

## **$\nu_e/\nu_{\mu}$ cross section differences and their impact on oscillation analyses**

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**Shallow Inelastic, Deep Inelastic and Inclusive Scattering / 79**

## **DIS Ratio measurement from MINERvA**

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**Shallow Inelastic, Deep Inelastic and Inclusive Scattering / 80**

## **nubar/nu Ratio measurement at MINERvA**

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**Shallow Inelastic, Deep Inelastic and Inclusive Scattering / 81**

## **MicroBooNE Overview**

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**Shallow Inelastic, Deep Inelastic and Inclusive Scattering / 82**

## **Muon neutrino inclusive CC cross section measurement on carbon and carbon/oxygen ratio at T2K**

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**Shallow Inelastic, Deep Inelastic and Inclusive Scattering / 83**

## **Current and future measurements with electron neutrinos and electron anti-neutrinos in the T2K off-axis near detector**

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**Shallow Inelastic, Deep Inelastic and Inclusive Scattering / 84**

## **Inclusive numu and nue CC measurements at NOvA**

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**Shallow Inelastic, Deep Inelastic and Inclusive Scattering / 85**

## **Global analysis from DIS to the small-Q<sup>2</sup> region**

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**Shallow Inelastic, Deep Inelastic and Inclusive Scattering / 86**

## **Nuclear medium effects on structure functions**

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87

## **Global analysis of nuclear PDFs**

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**Neutrino Flux Calculations and Measurements / 88**

## **Hadron production overview**

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## **The DUNE Flux Prediction**

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**Neutrino Flux Calculations and Measurements / 92**

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**Neutrino Flux Calculations and Measurements / 93**

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**Electron Scattering and Other Non-neutrino Measurements / 94**

## **Electron scattering with ab initio approaches**

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**Electron Scattering and Other Non-neutrino Measurements / 95**

## **Electron scattering with the Super Scaling Approach**

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**Electron Scattering and Other Non-neutrino Measurements / 96**

## **Pion Photoproduction**

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**Electron Scattering and Other Non-neutrino Measurements / 97**

## **Short Range Correlations in Heavy Nuclei**

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**Electron Scattering and Other Non-neutrino Measurements / 98**

## **Determination of the axial mass parameter and proton charge radius**

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**Consider for Talk:**

Yes

**Electron Scattering and Other Non-neutrino Measurements / 99**

## **R ratio measurements from JLAB**

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We present results on the nuclear dependence ratio of R, the longitudinal and transverse structure function ratio. We present results on the difference between R<sub>A</sub>(nucleus) and R<sub>D</sub>(deuterium) for Carbon (R<sub>C</sub>-R<sub>D</sub>), Aluminum (R<sub>AL</sub>-R<sub>D</sub>), Iron (R<sub>Fe</sub>-R<sub>D</sub>) and Copper (R<sub>Cu</sub>-R<sub>C</sub>) for Q<sup>2</sup>=2, 3, and 4 GeV<sup>2</sup> from electron scattering experiments at Jefferson Lab.

**Consider for Talk:**

Yes

**Electron Scattering and Other Non-neutrino Measurements / 100**

## **Measurement of the Spectral Function of <sup>40</sup>Ar**

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**Electron Scattering and Other Non-neutrino Measurements / 101**

## **Pion scattering and secondary interactions**

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**Electron Scattering and Other Non-neutrino Measurements / 102**

## **Pion scattering at LAriAT**

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## **Pion production at the nucleon level: resonances and continuum**

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## **Pion Production at the Nucleon Level**

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## **Pion production at the nucleon level: from low to high W**

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## **Nuclear Effects in Pion Production/Resonance Region**

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**Neutrino Pion Production and Other Inelastic Interactions / 107**

## **Analysis of bubble chamber data on neutrino-induced pion production off the deuteron**

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## **Pion production measurements at T2K**

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**Neutrino Pion Production and Other Inelastic Interactions / 109**

## **Pion production measurements at MINERvA**

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**Neutrino Pion Production and Other Inelastic Interactions / 111**

## **ArgoNeuT Charged single pion production measurement**

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**Neutrino Interaction Generators / 112**

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**Neutrino Interaction Generators / 113**

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**Neutrino Interaction Generators / 114**

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**Neutrino Interaction Generators / 115**

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**Neutrino Interaction Generators / 117**

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118

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**Neutrino CC and NC Scattering without Pion Production / 119**

### **Neutrino charged current pionless cross section measurements from T2K**

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**Neutrino CC and NC Scattering without Pion Production / 120**

### **Neutrino charged current pionless cross section measurements from MINERvA (I)**

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**Neutrino CC and NC Scattering without Pion Production / 121**

### **Neutrino charged current pionless cross section measurements from MINERvA (II)**

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**Neutrino CC and NC Scattering without Pion Production / 122**

### **Validation of neutrino energy estimation using electron scattering**

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**Neutrino CC and NC Scattering without Pion Production / 123**

### **Correlations in quasielastic-like neutrino-nucleus interactions**

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**Neutrino CC and NC Scattering without Pion Production / 124**

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**Future Experiments / 125**

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**Future Experiments / 126**

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**Future Experiments / 128**

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**Future Experiments / 129**

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**Future Experiments / 130**

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**Future Experiments / 131**

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**Future Experiments / 132**

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**Future Experiments / 133**

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**Low Energy Neutrino Scattering / 134**

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**Low Energy Neutrino Scattering / 135**

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**Low Energy Neutrino Scattering / 136**

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**Consider for Talk:**

Yes

**Low Energy Neutrino Scattering / 137**

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Low Energy Neutrino Scattering / 138

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Low Energy Neutrino Scattering / 139

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poster presentation/nustec / 141

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142

## **Poster Session Winner 2**

143

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144

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145

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Poster Session / 146

### ARAPUCA light trap for large liquid argon time projection chambers

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ARAPUCA is a totally innovative device for liquid argon scintillation light detection. It is composed of a passive light collector and of active devices. The latter are standard SiPMs that operate at liquid argon temperature, while the passive collector is a photon trap, which allows to collect light with extremely high efficiency. The total detection efficiency of the device can be tuned by modifying the ratio between the area of the active components (SiPM) and that of the optical window. Few arrays of ARAPUCAs will be installed inside the prototype of the Deep Underground Neutrino Experiment - protoDUNE - and their performances will be compared with those of more standard solutions based on guiding bars. The results of the most recent tests of ARAPUCAs in a liquid argon environment, which led to the actual design for the protoDUNE, will be reported together with the proposal of a photon detection system for the Deep Underground Neutrino Experiment based on ARAPUCAs combined with dielectric mirror foils coated by wavelength-shifter.

**Consider for Talk:**

No

**Consider for Poster:**

Yes

147

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148

### R Ratio Measurements from Jlab

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We present results on the nuclear dependence ratio of  $R$ , the longitudinal and transverse structure function ratio. We present results on the difference between  $R_A(\text{nucleus})$  and  $R_D(\text{deuterium})$  for Carbon ( $R_C - R_D$ ), Aluminum ( $R_{AL} - R_D$ ), Iron ( $R_{Fe} - R_D$ ) and Copper ( $R_{Cu} - R_C$ ) for  $Q^2 = 2, 3, \text{ and } 4 \text{ GeV}^2$  from electron scattering experiments at Jefferson Lab.

**Consider for Talk:**

Yes

**Consider for Poster:**

No

**Low Energy Neutrino Scattering / 150**

## **Gd-relevant measurements**

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**Systematic Uncertainties and Impact on Oscillation Measurements / 151**

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**announcement / 152**

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**poster presentation/nustec / 153**

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**Announcement / 154**

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**Discussion / 155**

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## **Analyzing the nuclear recoil system in neutrino-nucleus reactions**

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**Poster Session / 158**

## **Multinucleon Excitation (2p2h) Model Comparison**

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**Poster Session / 159**

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## **Constraining The T2K Neutrino Flux with NA61/SHINE Replica Target Data**

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**Poster Session / 161**

## **NuPRISM detector performance and optimization study**

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Poster Session / 162

## **Measurement of gamma rays from giant resonances of $^{16}\text{O}$ and $^{12}\text{C}$ with application to supernova neutrino detection.**

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Poster Session / 163

## **Investigations of Cross Section Model and Near Detector Choices for DUNE.**

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Poster Session / 164

## **Electron neutrino quasi elastic scattering in Minerva**

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Poster Session / 165

## **Modeling gamma-rays from the thermal neutron capture on gadolinium based on JPARC-ANNRI data**

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Poster Session / 166

## **Progress of the Measurement of the Electron Neutrino Charged-current Inclusive Cross Section in NOvA**

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Poster Session / 167

## **An Inclusive Neutral Pion Production in Charged Current Muon Neutrinos Analysis at the NOvA Near Detector**



Poster Session / 168

## **NOvA tuning of the GENIE generator using internal and external data constraints**

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Poster Session / 169

## **Measurement of Neutral Current Coherent $\Pi_0$ Production In The NOvA Near Detector**

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Poster Session / 170

## **MINERvA Model to Describe (Anti)Neutrino-Nucleon Scattering**

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Poster Session / 171

## **Measurement of Neutrino Induced Resonance Pion Production in the NOMAD Detector**

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Poster Session / 172

## **Measurement of Muon Neutrino Quasi-Elastic-Like Scattering in MINERvA at $E_{\nu} \sim 6$ GeV**

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Poster Session / 173

## **Hadron Production Measurements with a Hybrid Emulsion/Electronic Detector**

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Poster Session / 174

## **Measurement of Deep Inelastic Scattering Cross Section in the MINERvA Detector**

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Poster Session / 175

## **Measurement of gamma ray production from a neutron beam on water**

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Poster Session / 176

## **Identification of nuclear effects in CCQE-like neutrino-hydrocarbon interactions using transverse kinematic imbalances**

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Poster Session / 177

## **Controlling uncertainties in the Short Baseline Neutrino program**

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Poster Session / 178

## **Improvements to the Pion Secondary Interaction Systematic Uncertainties at T2K**

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Poster Session / 179

## **Tackling the Neutrino Oscillation Problem**

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Poster Session / 180

## **Quasi-elastic neutrino-argon scattering in a CRPA approach**

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**Poster Session / 181**

## **Hadronic interaction measurements with the Hybrid Emulsion Detector**

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**Poster Session / 182**

## **Techniques for a Combined Neutrino Flux and Cross Section Unfolding**

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**Poster Session / 183**

## **Investigation of multi-nucleon effects and neutron counting in antineutrino-carbon reactions.**

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**Poster Session / 184**

## **Neutral Current Single Pi0 event rate on water in Pi0 Detector at T2K**

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**Poster Session / 185**

## **A New Framework To Extract The Electron Anti-neutrinos Cross Section At The T2K Off-Axis Near**

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**Poster Session / 186**

## **NUISANCE and single pion production on the nucleon**

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**Poster Session / 187**

**Progress of the Charged Pion Semi-Inclusive Neutrino Charged-Current Cross Section in NOvA**