

Qiyu Yan 严启宇

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Education

University of Warwick 2023/06 – 2024/05
Visiting Ph.D. Student in Physics Coventry, UK
Supervisor: Prof. Xianguo Lu

University of Chinese Academy of Sciences Since 2021/09
Ph.D. Student in Physics Beijing, China
Supervisor: Prof. Xianguo Lu (Warwick), Prof. Yangheng Zheng

University of Chinese Academy of Sciences 2017/09 – 2021/06
B.Sc. in Physics Beijing, China
• Core Course GPA: **3.88/4.0** [Link to thesis](#)

Projects

PROFESSOR2-Based ReWeight for GENIE 2023 – Present
Supervisor: Prof. Xianguo Lu, Prof. Constantinos Andreopoulos

The Ghent Hybrid Model in NUWRO 2023 – 2024
Supervisor: Prof. Xianguo Lu

B.Sc. Thesis: Physics Sensitivity Study with GeV Neutrinos in JUNO 2020 – 2021
Supervisor: Dr. Xianguo Lu (Oxford), Prof. Yangheng Zheng

- Use Honda flux and GENIE generator to predict the event rate and final state particles of atmospheric neutrino interactions in JUNO detector.
- Use PROB3 to calculate the oscillation probability for different oscillation parameters.
- Use GEANT4 to simulate the propagation of final state particles in JUNO detector, to estimate the energy resolution.
- Use estimated energy resolution and angular resolution to calculate the sensitivity of JUNO to neutrino mass ordering problem.

Summer Project: GEANT4 Based Simulation of Time Projection Chamber 2020/07 - 2020/09
Supervisor: Dr. Xianguo Lu (Oxford)

- Use GEANT4 to simulate the behavior of different particles going through a TPC detector, record the energy deposit dE/dx and track length.
- Observed different Bragg peak behavior from different particles, which may be used to conduct particle identification in TPC detector.
- Observed the dependence on the energy deposit of track length, which may be used to conduct energy measurement in TPC detector.

Collaborations and Roles

- GENIE Collaboration 2023 – Present
 - Develop new ReWeight tool.
- JUNO Collaboration 2021 – Present
 - GANYMEDE PWG: work on GeV generator integration to JUNO software and incorporating up-to-date neutrino interaction models with JUNO.
 - Generator Task Lead: 2023 – Present
 - GENIE:
 - Development: AGKYLowW2019 directionality bug fix ([GENIE-MC/Generator:226](#))

- NuWRO:
 - Development:
 - 3D atmospheric flux interface
 - Metropolis-Hastings-based sampling algorithm
 - Ghent single-pion-production model ([arXiv: 2405.05212](https://arxiv.org/abs/2405.05212) [[hep-ph](#)])
 - Bugfix:
 - NuWRO might crash in rare case with numeric error (JUNO internal)
 - 2D atmospheric mixed flavor flux handling ([NuWro/nuwro:32](#))
 - Internalisation in JUNO
 - Benchmarking
- GENNuWRO (NuWRO wrapper in JUNO)
 - Development
- MC production
 - Management and execution
- Development of quality control tools for Monte Carlo sample

Conferences

Poster: Qiyu Yan, Júlia Tena-Vidal, Marco Roda, Costas Andreopoulos and Xianguo Lu on behalf of GENIE Collaboration, *Professor Based ReWeight for GENIE Generator*, **NEUTRINO2024**. [Milan Italy 2024/06](#)

Poster: Jie Cheng, Zhenning Qu, Kaile Wen, Qiyu Yan and Xianguo Lu, *Status of the GANYMEDE Working Group for GeV Physics at JUNO*, **NEUTRINO2022**. [Seoul Korea \(online\) 2022/06](#)

Publications

Qiyu Yan, Kajetan Niewczas, Alexis Nikolakopoulos, Raúl González-Jiménez, Natalie Jachowicz, Xianguo Lu, Jan Sobczyk, Yangheng Zheng, *The Ghent Hybrid Model in NuWRO: a new neutrino single-pion production model in the GeV regime*, [arXiv: 2405.05212](https://arxiv.org/abs/2405.05212) [[hep-ph](#)] Submitted to JHEP