

# ASSISTING HADRON SPECTROSCOPY WITH DEEP LEARNING

*Invited lecture and talks of NIP faculty Dr. Denny Lane Sombillo*



One of the NIP faculty, Dr. Denny Lane Sombillo, gave a lecture at the [International School for Strangeness Nuclear Physics 2022 \(SNP School 2022\)](#), held at Tohoku University, Sendai, Japan, on 24-28 October 2022. He led the two sessions of the school and discussed the basic concepts of deep learning in physics and its application to hadron spectroscopy. More than 100 students attended the event in person and online. This event is the eleventh series of the annual SNP School since 2012. The Asian Nuclear Physics Association (ANPhA) is among the sponsors of this school.

Dr. Sombillo was also invited as a speaker at the [International Symposium on Clustering as a window on the Hierarchical Structure of Quantum Systems \(CLUSHIQ 2022\)](#). He talked about neural networks in classifying threshold enhancements observed in the scattering data. The symposium is a multi-disciplinary meeting covering topics from atomic physics, hadron physics, and the many-body bound states giving rise to the universal near-threshold phenomena. It was held at Sendai International Center, Sendai, Japan, on 31 October to 03 November 2022.

Prior to the school and the symposium, Dr. Sombillo gave a contributed talk to [The 13th International Workshop on the Physics of Excited Nucleons \(NSTAR 2022\)](#) at Santa Margherita Ligure, Genova, Italy, on 17-21 October 2022. Participants from this workshop were invited based on their recent contributions to the study of nucleon resonances. In his talk, he discussed how to design a deep neural network that extracts the pole configuration of a pion-nucleon scattering amplitude. This contribution is a collaborative work with Prof. Yoichi Ikeda of CiDER, Prof. Atsushi Hosaka, and Prof. Toru Sato of RCNP, Osaka University.

SNP School 2022 group photo



CLUSHIQ 2022 photos



NSTAR 2022 group photo

