



Contribution ID: 5

Type: **not specified**

Muon monitor signal to predict NuMI beam parameters and horn current by applying Machine Learning techniques

Monday, July 18, 2022 8:40 PM (20 minutes)

The neutrino beam quality at the NuMI beamline is determined by observing the incident proton beam parameters and the horn current behaviors. Three arrays of muon monitors located in the downstream of the hadron absorber provide the measurements of the primary beam and horn current quality. We studied the response of muon monitors with the proton beam profile changes and focusing horn current variations. The responses of muon monitors have been used to implement Machine Learning (ML) algorithms to predict the beam parameters by spill-to-spill. In this work we demonstrate a ML application of predicting the beam position horizontal and vertical, beam intensity and horn current with a good prediction accuracy. This work is important for many future applications such as beam and horn current quality assurance and incident detections, neutrino beam systematics studies and neutrino beam quality assurance. Our results demonstrate the capability of developing useful ML applications for future beamlines such as LBNF.

In-person or Virtual?

In-person

Primary author: WICKREMASINGHE, Don Athula (Fermilab)

Co-author: YONEHARA, Katsuya (Fermilab)

Presenter: WICKREMASINGHE, Don Athula (Fermilab)

Session Classification: Poster Session