Contribution ID: **42** Type: **not specified**

Iterative Unfolding of the Angular Distribution of Drell–Yan Production in p+Fe Interactions at 120 GeV Beam Energy

In the naive Drell–Yan model, the angular distribution of the Drell–Yan process has zero $\cos 2\phi$ modulation, where ϕ denotes the azimuthal angle of dimuons in the Collins–Soper frame. However, a sizable $\cos 2\phi$ dependence was observed in pion-induced Drell–Yan experiments, such as the NA10 and E615 experiments. The Boer–Mulders function is a transverse momentum dependent distribution that represents the correlation between the transverse spin and the transverse momentum of the quark. A non-zero Boer–Mulders function can produce a $cos2\phi$ modulation in Drell–Yan angular distribution. We present an update on the measurement of the $\cos 2\phi$ modulation of proton-induced Drell–Yan dimuons produced at the SeaQuest/E906 Fermilab experiment, using a 120 GeV proton beam on an Fe beam dump upstream of the dimuon spectrometer. Our analysis of SeaQuest data provides an opportunity to extract the Boer–Mulders function for the Fe nucleus. To extract the Drell–Yan signal, a combinatoric background subtraction method was developed. We use the two Data Unfolding methods, Bayesian and singular value decomposition (SVD), to correct all inefficiencies and account for bin migration. As part of the unfolding, we have developed an iterative technique that improves the response matrix based on the outcome of the previous unfolding step.

Session Classification: Dark Sector Physics