**Implicit quantile networks for jet reconstruction and mapping**[1]
MICHELLE KUCHERA, Davidson College, BRADEN KRONHEIM, University of Maryland, HARRISON PROSPER, Florida State University, RAGHURAM RAMANUJAN, Davidson College — We used Implicit Quantile Networks (IQNs) for successful jet simulation and correction using the tools and simulated data from the Compact Muon Solenoid (CMS) Open Data portal. Jets that are created post-hadronization (*gen-jets*) are subject to detector effects and are observed as *raw reco-jets*. Often, corrections are applied to raw reco-jets based on knowledge of the detector response. These corrected jets are *reco-jets*. We consider two tasks: first, given the four-momentum of a gen-jet $g$, we model the conditional density of the four-momenta of the corresponding reco-jets (i.e., $p(r|g)$). Second, we consider the inverse problem: given a raw reco-jet $\hat{r}$, we output the conditional density of the four-momenta of the gen-jets that are consistent with $\hat{r}$ (i.e., $p(g|\hat{r})$). In this talk, we present the methodology of IQNs and present our results from this work.

Michelle Kuchera
Davidson College

Date submitted: 29 Sep 2021                    Electronic form version 1.4