

Abstract Submitted
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Self Organizing Maps EVAN ASKANAZI, University of Virginia — Self Organizing Maps (SOMs) are a type of artificial neural network that has been proven to be particularly useful in solving complex problems physics. The SOM uses an unsupervised learning process to map initial data onto final data and because it allows us to visualize multi dimensional data into two dimensional format. We are attempting to use the SOM to probe phenomenological patterns in Deep Inelastic Scattering (DIS). In DIS there is a cross section in electron hadron scattering that is dependent on the momentum fraction x of the partons in the hadron and the momentum transfer of the virtual photon exchanged. There is a part which is comprised of Structure Functions which in turn are comprised of the Parton Distribution Functions (PDFs). We aim to use the SOM to take theoretical models of these PDFs and fit it to the previous, known data. We aim to make the resulting Structure Functions fit the data results as closely as possible and make the comprising PDFs fit the PDFs determined by other collaborations as closely as possible as well. The Self Organizing Process will also be used to probe the behavior of the Parton Distribution Functions, in particular at large x values, in order to observe how they congregate.

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