Contribution ID: **543** Contribution code: **contribution ID 543**   Type: **Oral**

Self-Organizing-Maps in high energy particle physics

Monday, 29 November 2021 18:40 (20 minutes)

The Self-Organizing-Map (SOM) is a widely used neural net for data analysis, dimension reduction and clustering. It has yet to find use in high energy particle physics. This paper discusses two applications of SOM in particle physics. First, we were able to obtain high separation of rare processes in regions of the dimensionally reduced representation. Second, we obtained Monte Carlo scale factors by fitting the dimensionally reduced representation.
Analysis and training were performed on the data of the ATLAS Machine Learning challenge and on Open Data.

Significance

First application of SOM to searches in particle physics.

References

Speaker time zone

Compatible with Europe

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Session Classification: Track 2: Data Analysis - Algorithms and Tools

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