



Contribution ID: 149

Type: **Oral**

How to make any Network Lorentz-Equivariant

Tuesday 9 September 2025 17:00 (20 minutes)

We construct Lorentz-equivariant transformer and graph networks using the concept of local canonicalization. While many Lorentz-equivariant architectures use specialized layers, this approach allows to take any existing non-equivariant architecture and make it Lorentz-equivariant using transformations with equivariantly predicted local frames. In addition, data augmentation emerges as a special case of this approach, allowing us to directly compare data augmentation with equivariant models. We use the task-specific non-equivariant architectures in amplitude regression and jet tagging to benchmark local canonicalization.

Significance

References

<https://arxiv.org/abs/2411.00446>

Experiment context, if any

Authors: SPINNER, Jonas (ITP, Heidelberg University); PITZ, Sebastian (ITP, Heidelberg University); FAVARO, Luigi (Universite Catholique de Louvain (UCL) (BE)); PLEHN, Tilman (ITP, Heidelberg University); Mr GERHARTZ, Gerrit (ITP, Heidelberg University); Mr LIPPMANN, Peter (IWR, Heidelberg University)

Presenter: PITZ, Sebastian (ITP, Heidelberg University)

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

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