Poster

Semi and self-supervised approaches to space group and Bravais lattice determination

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During this talk, I will discuss our work [1] to use neural networks to automatically classify Bravais lattices and space-groups from neutron powder diffraction data. Our work classifies 14 Bravais lattices and 144 space groups. The novelty of our approach is to use semi-supervised and self-supervised learning to allow for training on data sets with unlabelled data as is common at user facilities. We achieve state of the art results with a semi-supervised approach. Our accuracy for our self-supervised training is comparable to that with a supervised approach.

[1] Satvik Lolla Et al, Journal of Applied Crystallography **55** (2022) https://doi.org/10.1107/S1600576722006069