

Extracting New Kinds of Information from Scattering Data

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X-ray scattering provides a wealth of information about material structure across a range of lengthscales. Information is frequently extracted by fitting data to a physical model. This talk will discuss a set of alternate strategies for extracting information from data.

Variance methods that analyze correlations within data can be used to extract hidden information; such as information about grain size distribution or local coordination. Distorted data--such as collected during grazing-incidence scattering--can be computationally unwarped to highlight the underlying structure and extract physical parameters.

Finally, machine-learning methods (such as convolutional neural networks) can be used to annotate images, paving the way towards autonomous experimental control.