

Reverse modelling for Lorentz transmission electron microscopy data

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Lorentz transmission electron microscopy (LTEM) measurements generate raster images of the phase change of electrons which pass through a magnetic sample. We develop an algorithm which can use such an image to determine the components of a thin film's magnetic domains which are perpendicular to the initial trajectory of those electrons. Application to the image created by a perpendicularly incident electron beam shows that the algorithm can produce a reasonable magnetic configuration for the sample. We also apply the algorithm simultaneously to images generated by orienting the electron beam at multiple angles in order to recover additional information about the out of plane components of the sample's magnetic configuration.