Contribution ID: **1842** Contribution code: **THPM111** Type: **Poster Presentation**

First correction to elastic scattering of electrons for microscopy

Thursday, 11 May 2023 16:30 (2 hours)

Ultrafast electron microscopy (UEM) can be used to probe ultrasmall (nm scale) and ultrafast (fs scale) world. At the fundamental level, atomic potentials determine the elastic electron scattering in UEMs. Here we calculate the first correction term analytically for elastic scattering of electrons by atoms in the weak phase object approximation. Its effect varies with atom types and electron energies and may be non-negligible for electron microscopy images.

Funding Agency

Brookhaven National Laboratory Directed Research and Development Program

Footnotes

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Yes

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Session Classification: Thursday Poster Session

Track Classification: MC8: Applications of Accelerators, Technology Transfer and Industrial Relations and Outreach: MC8.U05: Other Applications