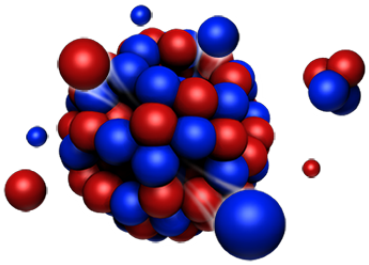

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The small angle neutron scattering extension in MCNPX

Monday, 14 October 2019 14:55 (25 minutes)

The MCNPX transport code is a commonly used code in the design of neutron sources. The traditional scattering kernels that describe materials in MCNPX do not capture small angle scattering effects. An implementation of small angle neutron scattering (SANS) has been developed in MCNPX. The implementation uses an analytical hard-sphere scattering with user-specified particle size, polydispersity, packing fraction, and contrast. Additionally, the implementation can use a user-supplied $I(q)$ vs. q data table. The implementation has been benchmarked with measurements at EQ-SANS. MCNPX studies of quasi-specular scattering in possible high-albedo materials for very cold neutrons, the simulation of divergence filters, and supplementing existing kernels for aluminum alloys with SANS will be discussed.

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