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## **Non-static surfaces in MCNPX: the Chopper Extension**

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Rotating objects, such as choppers, are common components of a neutron beamline, and the motion of these components is not described in the static geometry of an MCNPX model. The special case of non-static surfaces for rotation about a stationary point in space has been developed for MCNPX. In addition, velocity dependent kinematics due to the motion of the medium have been implemented. This implementation allows for the simulation of rotating objects at speeds comparable to the velocity of cold neutrons. Applications of the chopper extension will be discussed, including the direct simulation of a bandwidth chopper system, the thermalization of neutrons inside a spinning material, and the demonstration of a spinning single crystal.

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