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Inelastic neutron scattering study of spin-wave from single crystal BiFeO3 GUANGYONG XU, ZHIJUN XU, Brookhaven National Laboratory, JINSHENG WEN, UC Berkeley, MATTHEW STONE, Oak Ridge National Laboratory, GENDA GU, STEPHEN SHAPIRO, Brookhaven National Laboratory, R.J. BIRGENEAU, UC Berkeley, CHRIS STOCK, PETER GEHRING, NIST Center for Neutron Research — $BiFeO_3$ is one of the most promising multiferroic materials for device applications in spintronics and memory devices. There have been a number of studies on electric field tuning of antiferromagnetic domains, as well as possible E-field control of spin-waves in this material. The potential of controlling spin dynamics using electric field is extremely appealing. However, so far there have been very limited work on the direct measurements of spin-waves in $BiFeO_3$, mostly due to lack of large size single crystals. We will present our recent inelastic neutron scattering studies on a single crystal $BiFeO_3$, showing the full spin-wave spectrum in three-dimensions. A classical spin-wave model can be used to describe the results in details. The coupling parameters and spin-wave velocities have been obtained, and are in good agreements with those obtained in Raman measurements.

[X] Prefer Oral Session
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