Contribution ID: **116** Type: **Talk**

Spin dynamics in Multiferroic Ba2CoGe2O7

Tuesday 7 December 2021 17:05 (25 minutes)

Multiferroic $Ba_2CoGe_2O_7$ belongs to the square lattice Heisenberg antiferromagnets (SLHAF), which exhibit rich quantum phase diagrams of exchange interactions, Dzyaloshinskii-Moriya interactions with the external magnetic or electric fields, but the correlation between single-ion anisotropy and the magnetic field has remain hitherto unexplored through experimental findings in multiferroic quantum materials. we present very compelling and direct evidence of the anisotropic three-dimensional (3D) magnetic excitations in $Ba_2CoGe_2O_7$ for the first time, using Inelastic neutron scattering under magnetic fields upto 12 T. Additionally, we show the a pair of electromagnon modes (so far one mode has reported) are indeed dispersive in 3D and also responsive to the applied magnetic field as well. Most strikingly, here we present that the underlying strong single-ion anisotropy gets minimized or, tuned under the action of external magnetic field [R. Dutta et al., Phys. Rev. B 104, L020403]. In our believe, such tuning of single-ion anisotropy under magnetic field will bring a novel insight into the physics of general quantum phenomena towards also the multiferroic device applications point of view as the SIA could be tuned by an external electric field like in single-ion magnets or single-molecular magnets.

Author: Dr DUTTA, Rajesh (Institut für Kristallographie, RWTH Aachen University)

Presenter: Dr DUTTA, Rajesh (Institut für Kristallographie, RWTH Aachen University)

Session Classification: Structure Research

Track Classification: Structure Research