Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

THz magneto-electric excitations in the chiral compound Ba3NbFe3Si2O14 SOPHIE DE BRION, LAURA CHAIX[1], FLORENCE LEVY-BERTRAND, VIRGINIE SIMONET, RAFIK BALLOU, BENJAMIN CANALS, PASCAL LEJAY, Institut Néel, CNRS and Université Joseph Fourier, JEAN-BLAISE BRUBACH, GAEL CREFF, FABRICE WILLAERT, PASCALE ROY, Synchrotron SOLEIL, ANDRES CANO, ESRF — The langasite $Ba_3NbFe_3Si_2O_{14}$ displays a chiral structure and orders magnetically with a Neel temperature T_N=27K. We have determined its terahertz (THz) spectrum by means of synchrotron-radiation measurements. Three different types of excitation are present. The first one, at 13cm^{-1}, disappears at T_N and is assigned to magnons. The others, at 23cm^{-1} and 29cm^{-1}, persist up to four times T_N. According to their selection rules, they are interpreted as rotational modes of the lattice whose magneto-electric activity reveals a structural transition into a polar helical state.

[1]also at ILL

Sophie de Brion
Institut Néel, CNRS and Université Joseph Fourier

Date submitted: 29 Nov 2012 Electronic form version 1.4