

LATTICE PINNING OF MAGNETIC DOMAINS
IN THE HELIMAGNET $\text{Ba}_2\text{CuGe}_2\text{O}_7$

J. Chovan, N. Papanicolaou

University of Crete and Research Center of Crete
(Heraklion 71003, Greece;
e-mail: papanico@physics.uoc.gr)

S u m m a r y

The layered magnetic compound $\text{Ba}_2\text{CuGe}_2\text{O}_7$ exhibits spiral antiferromagnetic order thanks to a Dzyaloshinskii—Moriya (DM) anisotropy that is allowed by crystal symmetry. Here, we theoretically examine some finer issues such as the experimentally observed lattice pinning of the propagation vector of helical magnetic domains along the crystallographic $(1,1,0)$ or $(1,\bar{1},0)$ direction. We find that the DM anisotropy alone would actually lead to pinning along the $(1,0,0)$ or $(0,1,0)$ direction, but the agreement with experiment is restored upon including an additional exchange anisotropy that is also consistent with symmetry. The present results also shed light on the so-called bisection rule which has been abstracted from experiment in presence of an in-plane magnetic field.