

Satellite peak ratios according to stripes theory

B. Phillabaum

(Dated: June 28, 2006)

Abstract

This paper looks at the expected results for a neutron diffraction study according to stripes theory, paying attention to the ratio of incommensurate to satellite peaks. In particular this paper looks at a square wave profile and the effects of doping on the peaks, for most doping levels seen in the literature (hole concentrations of $1/6 < p < 1/10$) it appears that in order to detect satellite peak phenomenon a good lower bound for the signal-to-noise ratio is around 10. Finally information on the signal-to-noise ratio along with the domain wall spacing and doping from some recent neutron diffraction experiments is presented, this gives the reader an idea of whether any satellite peaks are observable at present. Using the signal-to-noise ratio and comparing to the peak ratio, none of the experiments which were found could make a conclusive claim on the existence of satellite peaks.