FREQUENCY SHIFTS NEAR THE FIRST ORDER PHASE TRANSITION IN NH_4Cl

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We study here our correlations between the volume changes and the frequency shifts for the q[110] mode of NH_4Cl for the pressures of 0, 0.5 and 0.95 kbars (first order phase region). By determining the mode Grüneisen parameter for the q[110] mode, we have predicted the ultrasonic frequencies for this mode using the length-change measurements for the NH_4Cl crystals from the literature. Our calculated frequencies are in good agreement with the observed frequencies for the q[110] mode in the first order phase region of NH_4Cl. This shows that our method of calculating the frequencies from the observed length-change data is reasonable and that we can then predict the observed behaviour of NH_4Cl.