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HG 7 Phonon Spectra in A-15 Superconducting Compounds.

H. G. SMITH, N. WAKABAYASHI, Y. K. CHANG, and D. LOWNDES, Oak Ridge National Laboratory,* G.W. WEBB and Z. FISK, UCSD, La Jolla, F.M. MUELLER, University of Nijmegen, A. ARKO, Argonne National Laboratory.--Sizable samples of Nb_3Sb (very low T_C) and non-stoichiometric Nb_3Ge ($T_C \approx 6K$) have recently become available and preliminary neutron scattering experiments are very promising with regard to determining the phonon spectra of a 'normal' and a moderate T_C A-15 compound for eventual comparison with Nb_3Sn (high T_C) when larger crystals become available. The acoustic modes and several low energy optic modes have been measured in the [100], [110], and [111] directions.

A large good crystal of V_3Si has also been obtained and there are indications that high energy modes ($\approx 14THz$) have been observed (unidentified at present) that were not observed in the previous neutron scattering studies of polycrystalline A-15 compounds. The softening of the transverse acoustic modes in the [110] and [111] directions has also been observed at low temperatures and will be discussed.

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