9.7 cm

SUBMILLIMETER SPECTROSCOPY OF ANTIFERROMAGNETIC FERROELECTRIC $\mathbf{YMn_2O_5}$

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Dynamics properties of the antiferromagnetic ferroelectric YMn_2O_5 were studied in the millimeter-submillimeter frequency range (2-33 cm^{-1}) in temperatures 5-300 K. Four absorption lines were observed in transmission spectra. Three of them appeared as a wide absorption band at 15-25 cm^{-1} below T_N=40 K, then after antiferromagnetic helical ordering of Mn ions, it splits into three lines. The fourth, most intensive line appears at the lower frequencies (6-8 cm^{-1}) below 20 K after a second phase transition. Temperature dependence of resonance frequencies, linewidths and mode contributions to magnetic and dielectric susceptibilities were obtained. The fourth most intensive mode was found to have dielectric origin. Three high frequency modes are probably due to an antiferromagnetic (exchange) resonance, excited both by ac magnetic and electric fields.
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13.4 cm

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