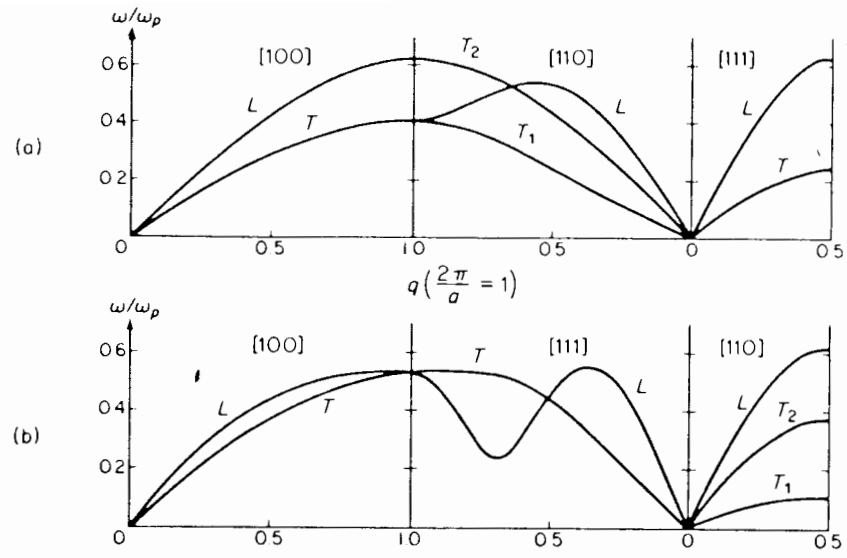


Figure 4.26 Calculated phonon frequencies $\omega(q)$ in units of the plasma frequency ω_p for (a) fcc and (b) bcc strontium showing longitudinal (L) and transverse (T) modes in symmetry directions. In the [100] direction, $\mathbf{q} = q(1, 0, 0)$, the polarization vectors are $e_L = (1, 0, 0)$, $e_T = (0, 1, 0)$, or $(0, 0, 1)$; in the [110] direction, $\mathbf{q} = q(1, 1, 0)$, $e_L = (1, 1, 0)\sqrt{2}$, $e_{T1} = (1, -1, 0)/\sqrt{2}$, $e_{T2} = (0, 0, 1)$; in the [111] direction, $\mathbf{q} = q(1, 1, 1)$, $e_L = (1, 1, 1)/\sqrt{3}$, $e_T = (1, -1, 0)/\sqrt{2}$, or $(1, 1, -2)/\sqrt{6}$. [*After* A. O. E. Animalu, *Phys. Rev.* **161**: 445 (1967)]

FIG. 1. Dispersion curves for diamond, silicon, and germanium in dimensionless units. If the three elements were homologous, the curves should coincide. The solid lines were calculated from the elastic constants of diamond given by McSkimin and Bond

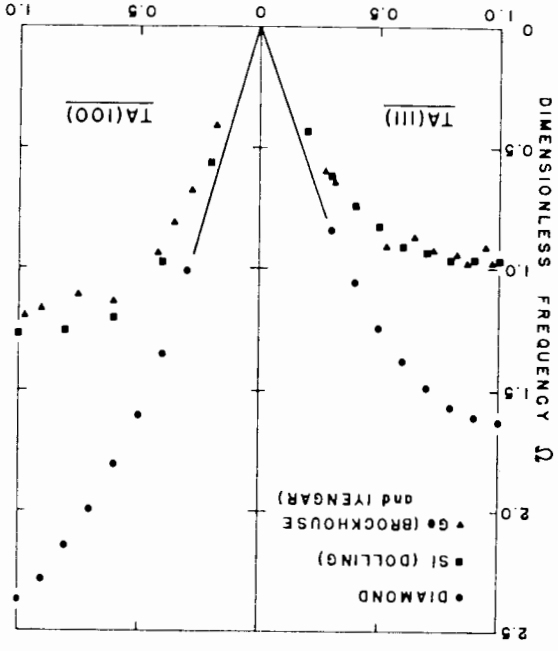
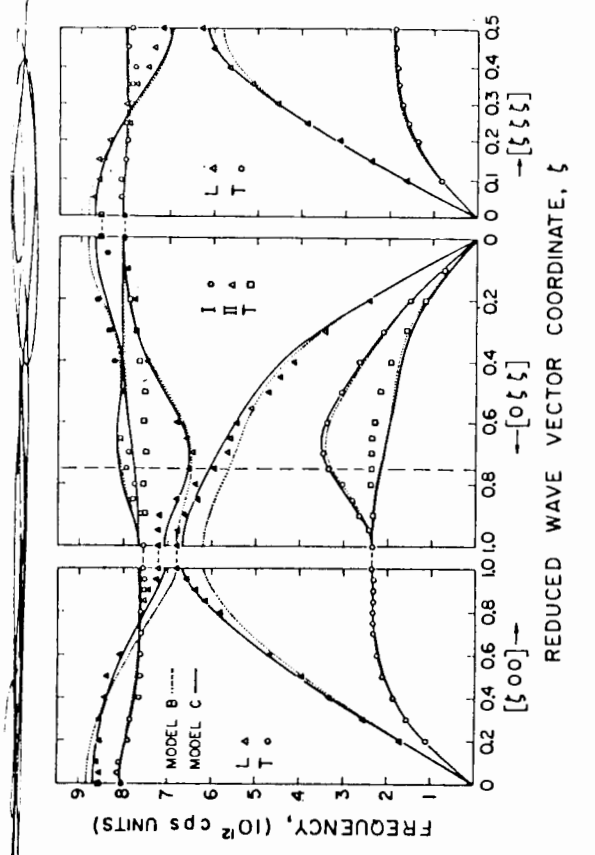
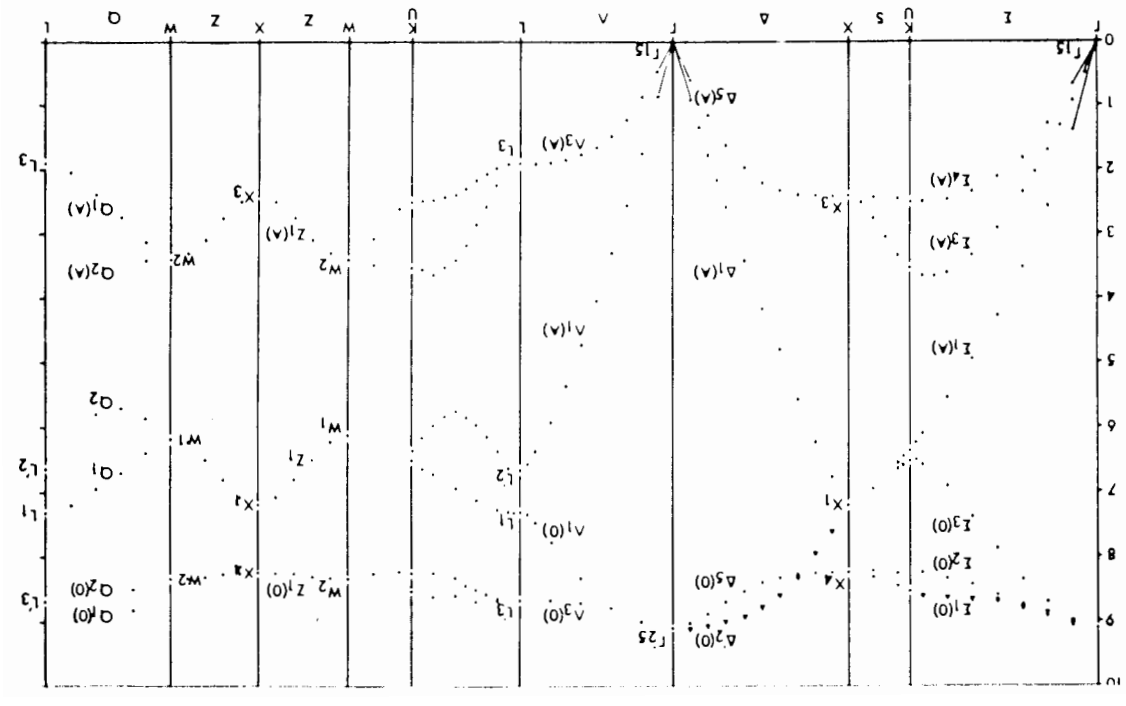


FIG. 2. Measured phonon-dispersion relations in Ge at 80°K.





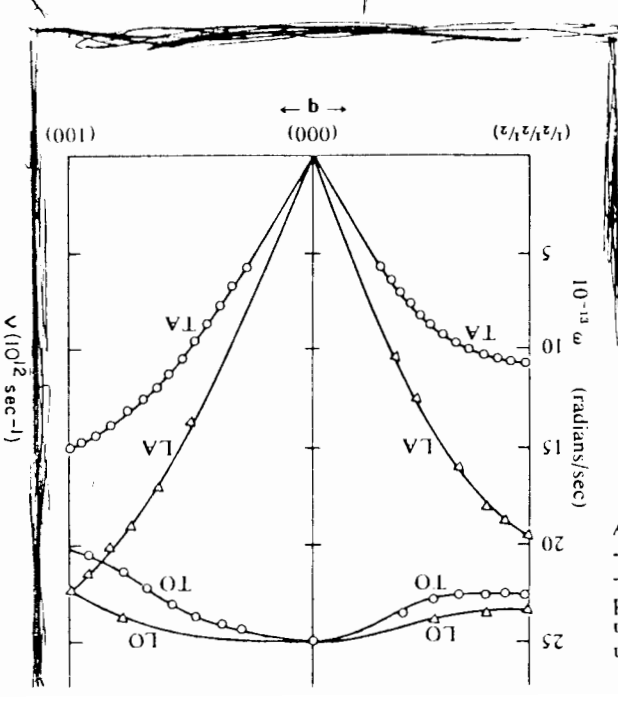


Figure 2-13 Dispersion curves for diamond. Data from J. L. Warren, R. G. Wenzel and J. L. Yarnell, *Inelastic Scattering of Neutrons* (Vienna, International Atomic Energy Agency, 1965).

FIG. 1. Dispersion curves for gallium arsenide based on measurements at 296°K. The solid points denote undetermined polarization. The vertical dashed line in the [0ζζ] direction represents the zone boundary. In this direction, points labeled I, II refer to modes whose polarization vectors are parallel to the (0$\bar{1}$1) mirror plane. Other modes are either strictly longitudinal (L) or transverse (T). The dotted and solid curves represent calculations based on two modifications, B and C, of the dipole approximation model.

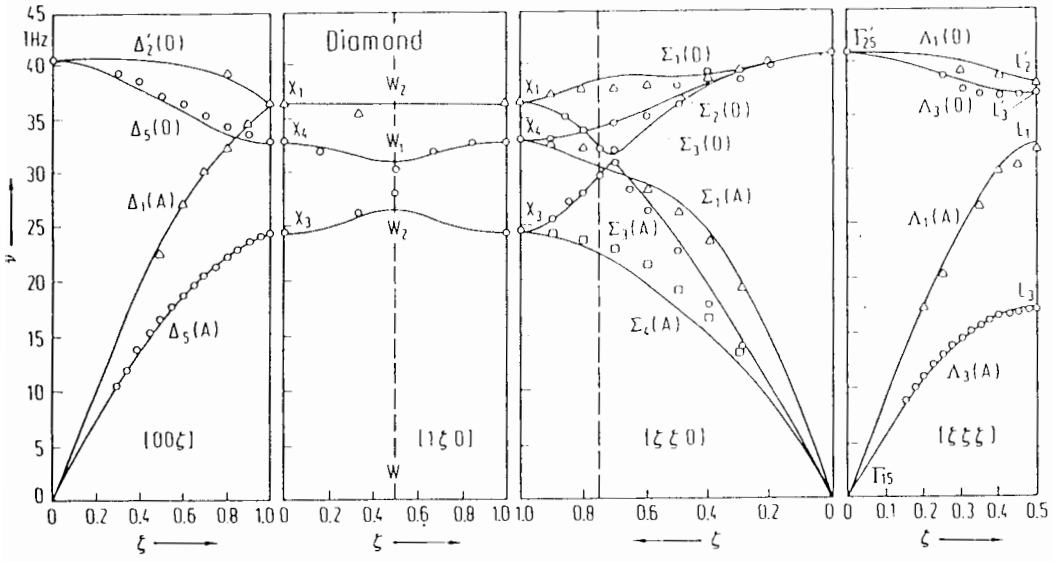


Fig. 6. Diamond. Phonon dispersion relations. Experimental data from neutron scattering, full curves: shell model calculation [67W].

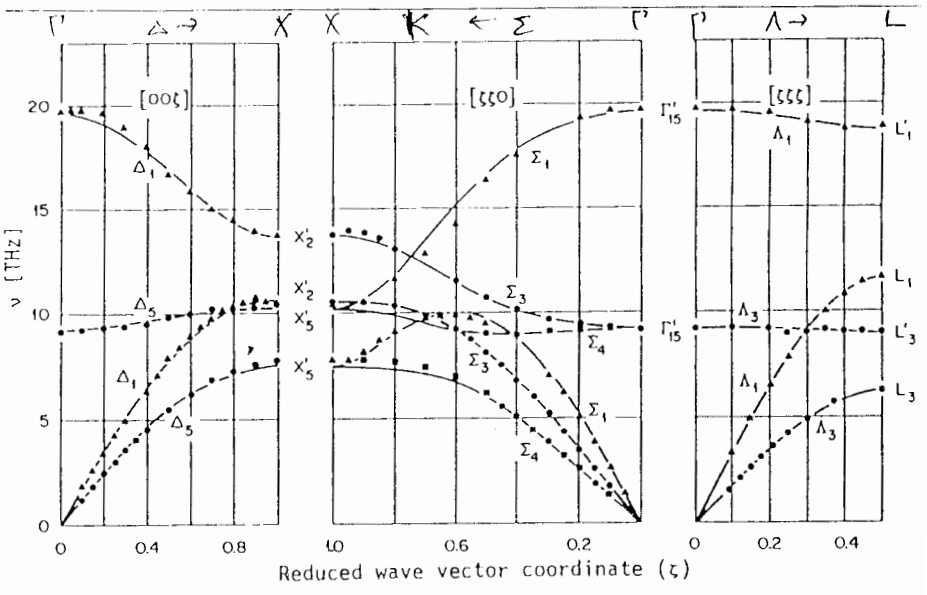


Fig. 4.2a. LiF: ω(q) [Ref.4.10, Fig.4], T = 298 K, M: 7P-SM, Lit. [4.2,11-13,64]

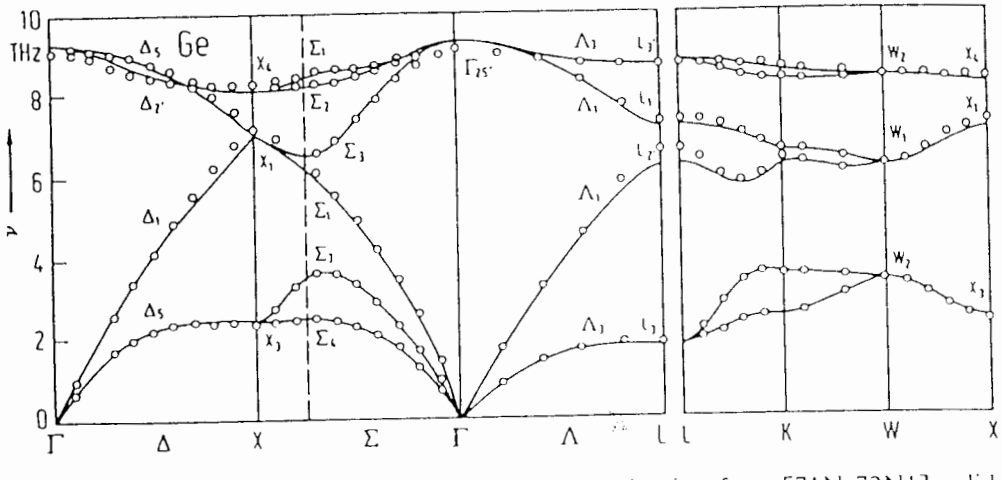


Fig. 7. Ge. Phonon dispersion relations. Experimental points from [71N, 72N1], solid lines: theory [77W].

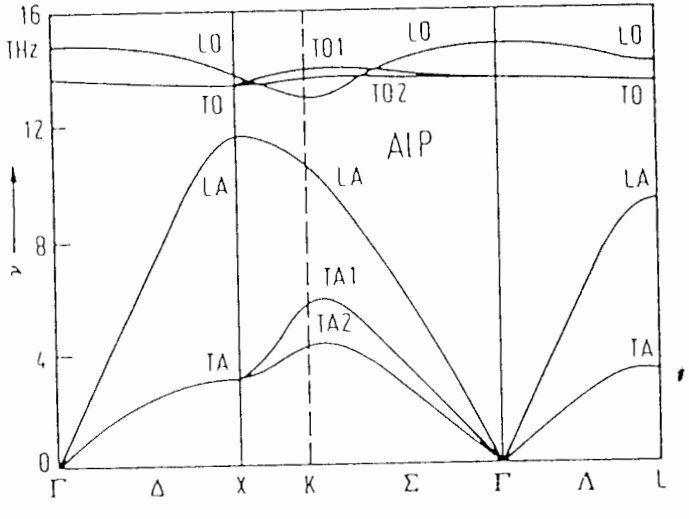


Fig. 3. AlP. Phonon dispersion relations [85K1].

Phonon Dispersion and Electron-Phonon Coupling in MgB_2 and AlB_2

K.-P. Bohnen, R. Heid, and B. Renker PRL 86, 5771 (2001)

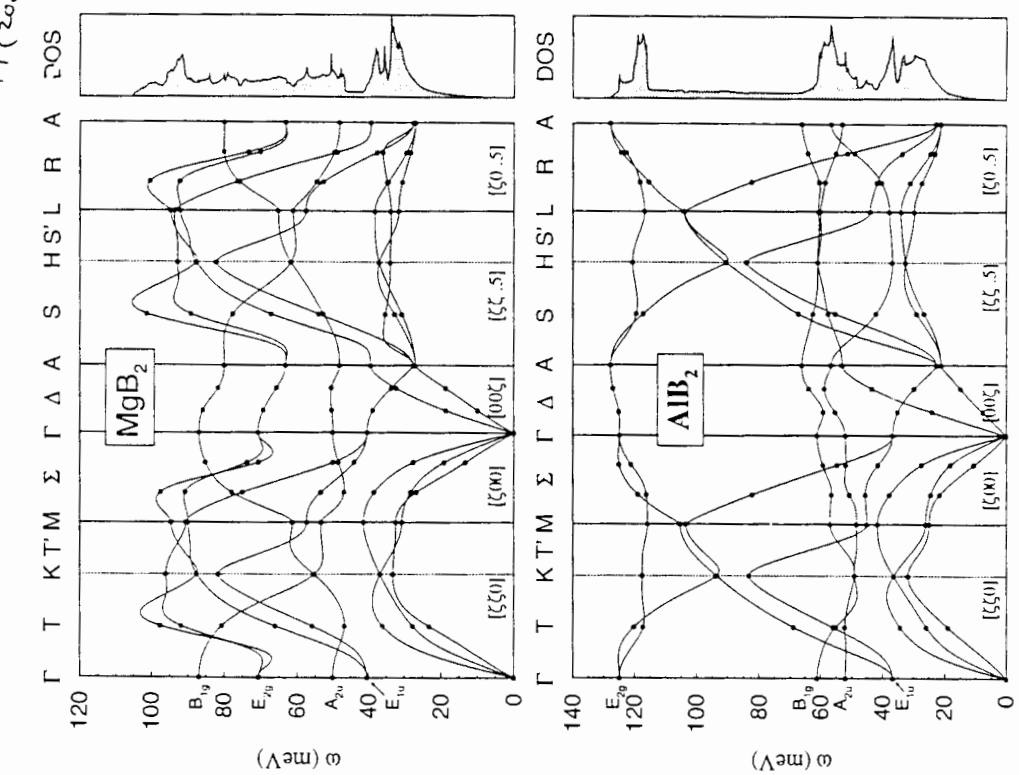


FIG. 2. Theoretical phonon dispersion curves along high-symmetry lines of the hexagonal BZ (notation after [32]) and DOS of MgB_2 and AlB_2. The dots represent actually calculated modes; lines are obtained by Fourier interpolation.

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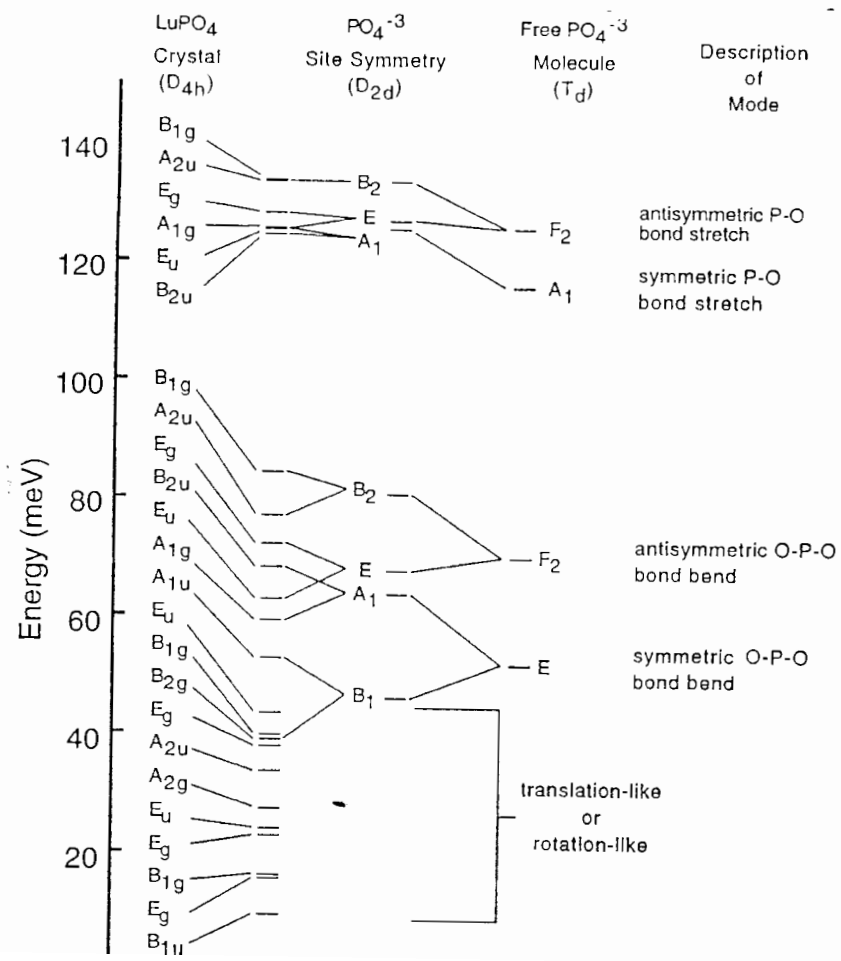
Lattice dynamics of xenotime: The phonon dispersion relations and density of states of $LuPO_4$

J. C. Nipko and C.-K. Loong

TABLE IV. Correlation for symmetry species of the T_d group of the PO_4^{-3} free ion, the D_{2d} group of the Lu^{3+} and PO_4^{-3} sites in the $LuPO_4$ crystal, and the D_{4h} group of the whole crystal.



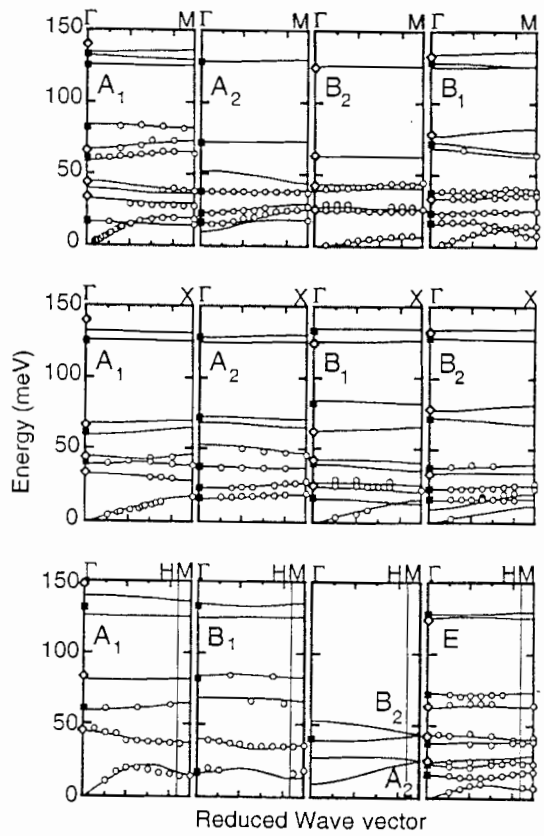


FIG. 4. Phonon-dispersion curves of $LuPO_4$ along the $[x,0,0]$, $[x,x,0]$, and $[0,0,x]$ symmetry directions. The symbols (■ = Raman, ◇ = Infrared, and ○ = neutron) indicate observed data, while the lines are calculated