between 40° and 50° in Fig. 6, in which are shown the curves of intersection of the wave surfaces with any plane containing the Z axis. As indicated earlier, this is a plot of R_i as a function of $(\Delta+\theta)$.

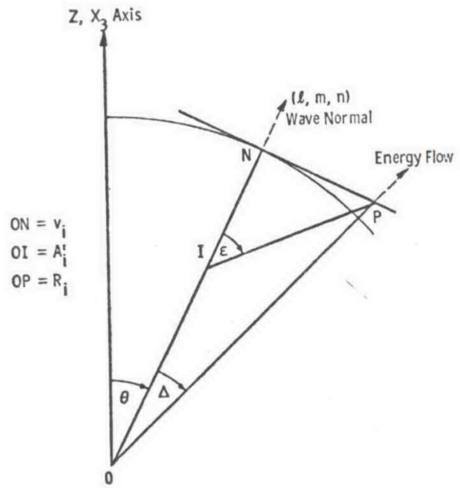

Fig. 3. Relation between wave normal and energy flow direction.

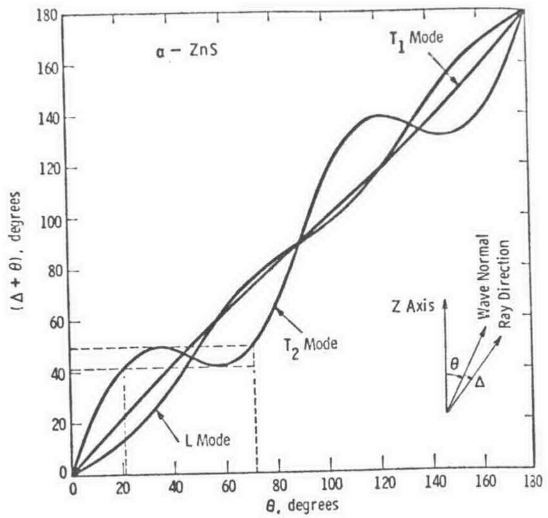

Fig. 5. $(\Delta+\theta)$ plotted as a function of θ for modes L, T_1 and T_2.

The T_1 mode is always a pure mode and hence the associated displacement vector is always parallel to the basal plane. The L and T_2 modes are

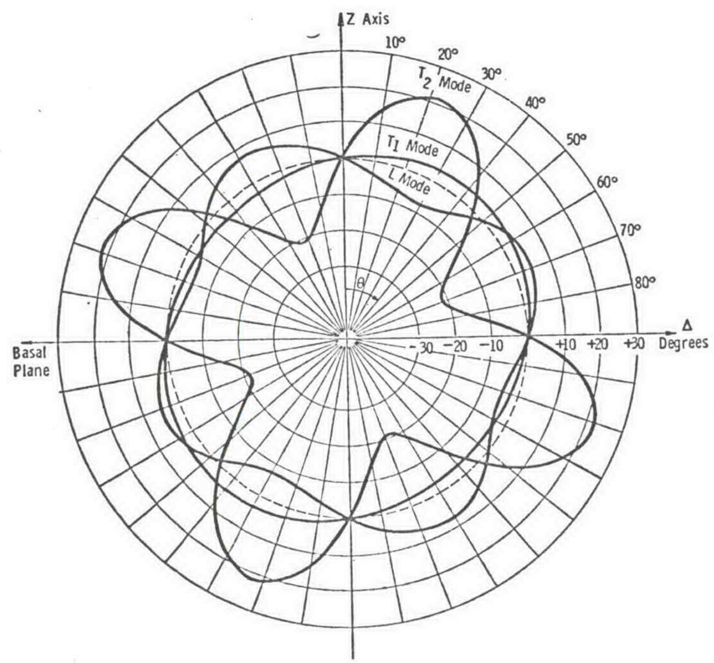

Fig. 4. Deviation of ray from wave normal in ZnS for L, T_1 and T_2 modes in any plane containing Z axis.

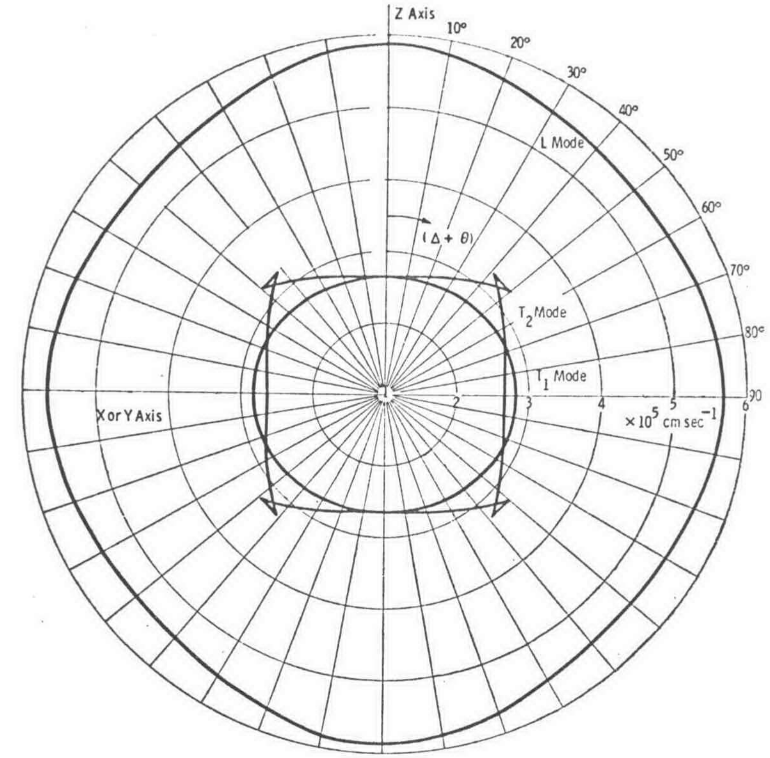

Fig. 6. Curves of intersection of wave surfaces for ZnS with any plane containing the Z axis.

not pure modes except in the basal plane, along the Z axis, and along the cone mentioned in the next paragraph.

The deviation, δ, of the L mode displacement vector from the wave normal for propagation in any plane containing the Z axis is given by[(3)]

$$\cos\delta_L = \frac{m^2nd+n(H_L-m^2a)}{[(H_L-m^2a)^2+m^2n^2d^2]^{1/2}}. \qquad (20)$$

The L and T_2 mode displacement vectors always remain in the plane containing the wave normal and the Z axis. As the three displacement vectors are mutually orthogonal and the T_1 mode displacement vector is always parallel to the basal plane, equation (20) will also give the deviation, δ_{T_2}, for the T_2 mode. Figure 7 indicates how δ varies as a function of θ. This figure indicates that other L, T_1, T_2 pure mode directions will form a cone, with axis along the hexad axis, and the semi-angle of 50°.

As a comparison with CdS, Fig. 8 shows the curves of intersection of the velocity surfaces with

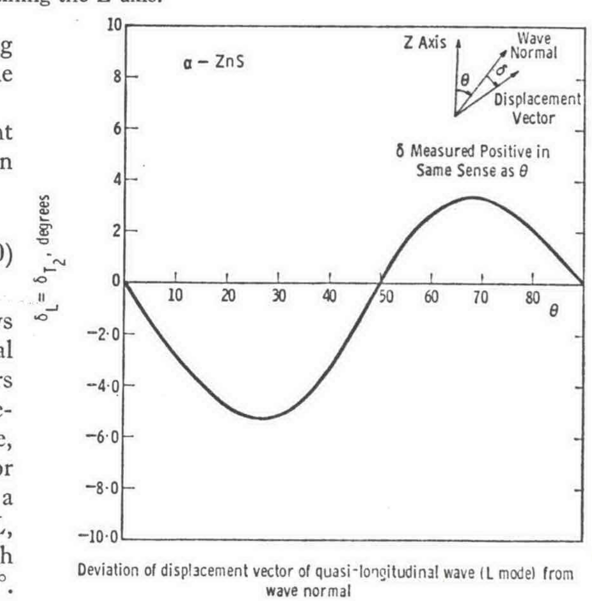

Fig. 7. Deviation of displacement vector of quasi-longitudinal wave (L mode) from the wave normal.