MTIV (L-S) and MTIV(G-L) the value of $|Z_1|$ oscillates for $0 \le \omega \le 10$ and vanishes for $\omega \ge 10$. Similar behavior is observed for MTIT(L-S) and MTIT(G-L) theories within $20 \le \omega \le 35$ range of frequency.

In Figure 7 the values of amplitude ratio $|Z_2|$ initially oscillates for $0 \le \omega \le 10$ and decreases as ω increases for MTIV (L-S) and MTIV(G-L). For MTIT(L-S) the value of amplitude ratio is maximum for $\omega \le 20$ and in case of MTIT(G-L) , its value slowly decreases and becomes constant near the boundary surface.

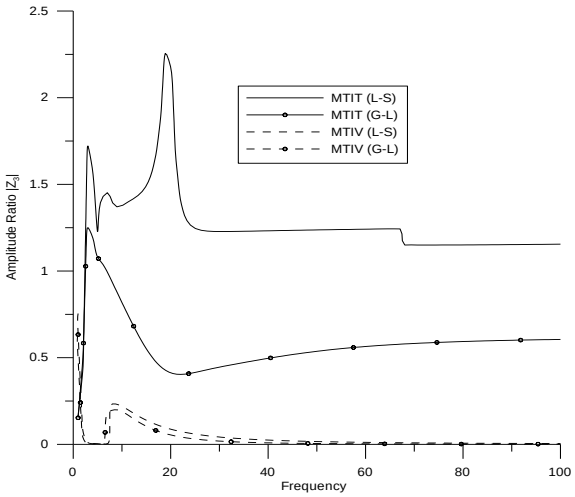

Fig. 16. Amplitude Ratio |Z3| when qT wave is incident.

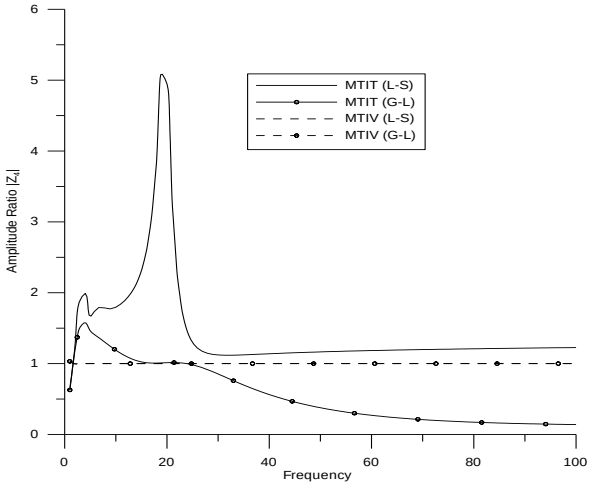

Fig. 17. Amplitude Ratio |Z4| when qT wave is incident.

In Figure 8 the values of $|Z_3|$ oscillates in the interval $0 \le \omega \le 15$ for all the cases attaining the maximum value for MTIV(L-S) and as ω increase further the behavior of $|Z_3|$ is similar and all values of $|Z_3|$ decrease due to viscosity effect for both the theories.

In Figure 9 the values of amplitude ratio $|Z_4|$ near the boundary surface oscillates for both theories and attaining maxima for MTIV(G-L) theory and then decreases as frequency increases. The trend and behavior of $|Z_4|$ as $\omega \ge 30$ is similar as $|Z_3|$ for $\omega \ge 22$.

When qTD wave is incident. In Figure 10 the amplitude ratio $|Z_1|$ oscillates for all the cases when $0 \le \omega \le 20$ and then become stationary for $\omega \ge 20$. The value of $|Z_1|$ decreases due to viscosity effect.

Figure 11 shows the behavior and variation of $|Z_2|$ when qTD wave is incident as that of $|Z_1|$ when qTD wave is incident for $0 \le \omega \le 20$ and as $\omega \ge 20$, the values are stationary for all the cases, but the value of $|Z_2|$ for MTIT(L-S) is more than MTIV(L-S) and the value of $|Z_2|$ for MTIV(G-L) is less than that of MTIT(G-L) showing the viscosity effect.

In Figure 12 the value of amplitude ratio $|Z_3|$ is minimum for MTIV(G-L) as compared to MTIT(G-L) theory and the values of $|Z_3|$ attains maximum for MTIT(L-S) as compared to MTIV(L-S) theory, and then flatten out near the boundaries for both the cases.

In Figure 13 the trend and behavior is similar but the value of $|Z_4|$ is higher for MTIT(L-S) theory due to viscous effect.

When qT wave is incident. In Figure 14 the value of $|Z_1|$ for MTIV(L-S) and MTIV(G-L) are less in comparison to MTIT(L-S) and MTIT(G-L) due to viscosity effect for $0 \le \omega \le 10$ and as $\omega \ge 20$ the values are stationary for all the cases.

In Figure 15 the value of $|Z_2|$ is more for MTIV(L-S) and MTIV(G-L) as compared to MTIT(L-S) and MTIT(G-L) , its value instantaneously increase and decrease as ω increases respectively. The values of MTIT(L-S) and MTIT(G-L) oscillates and become stationary as ω increases .

In Figure 16 the value of $|Z_3|$ for MTIV(L-S) and MTIV(G-L) is opposite to MTIT(L-S) and MTIT(G-L) initially. Also the value of $|Z_3|$ for MTIV(L-S) and MTIV(G-L) decreases as ω increases.

In Figure 17 the value of $|Z_4|$ for MTIV(L-S) and MTIV(G-L) are more than MTIT(L-S) and MTIT(G-L) initially, in the intermediate range of ω the value of $|Z_4|$ are small. As $\omega \ge 25$ the values of $|Z_4|$ for MTIV(L-S) and MTIV(G-L) lie between MTIT(L-S) and MTIT(G-L).

7. Conclusion

In the present investigation, reflections of plane waves in transversely isotropic micropolar thermoelastic solid have been discussed. The trend of variation and behavior of the amplitude ratio $|Z_1|$ is similar for incidence of qLD, qTD, qTM and qT with change in their magnitude values. The value of amplitude ratio $|Z_1|$ for MTIT (L-S) remains more in comparison with MTIT(G-L) for incidence of qTD, qTM and qT, except for qLD, where reverse behavior occurs for the value of $|Z_1|$.

The behavior of $|Z_3|$ is different for all the incident waves, however, the value of amplitude ratio $|Z_4|$ is more in case of G-L theory due to viscosity effect, for the incident of qLD and qTM waves, but for the remaining incident waves the value of amplitude ratio $|Z_4|$ is more for L-S theory.

From the present investigation, it is concluded, that the values of amplitude ratios shows sharp oscillations at initial frequency for incident qT, qTD, qTM as compared to qLD waves. An appreciable effect of viscosity and relaxation time are noticed on amplitude ratios of various reflected waves.

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