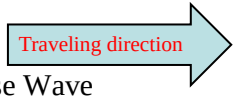
Question 19

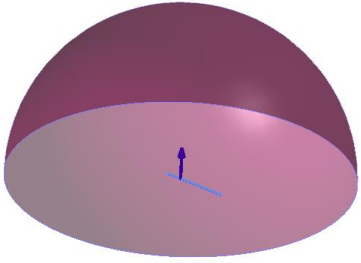
Q: What is the difference between longitudinal and transverse waves?

A: Only longitudinal waves, or compressional waves are taken into account in the acoustic analysis.
To take into account transverse waves, or shear waves, for analysis, the structure needs to be analyzed with piezo analysis coupled.

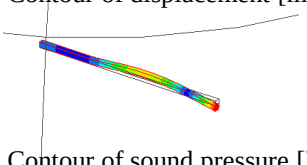
Longitudinal Wave



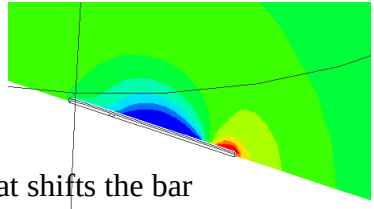
Transverse Wave



Contour of displacement [mm]



Contour of sound pressure [Pa]



In this example, the vibration that shifts the bar transversely generates transverse waves in the bar. To solve the phenomenon, the acoustic analysis coupled with the piezoelectric analysis will be required.