Answer on Question #67614 – Physics – Mechanics | Relativity

Question:

In the phenomenon of Doppler Effect, the speed of source and listener are 0.6 times and 0.2 times as speed of sound in air at 0°C and moving away from each other. If frequency of sound wave is 2 KHz then calculate frequency of sound for listener?

Answer:

The formula of Doppler Effect is:

$\nu = \nu_0 \frac{v - v_l}{v + v_s}$, where v is the speed of sound, v_s is the speed of source and v_l is the speed of listener.

So, now we can find frequency:

$\nu = \nu_0 \frac{v - v_l}{v + v_s} = 2 \frac{v - 0.2v}{v + 0.6v} = 2 \frac{0.8}{1.6} = \frac{2}{2} = 1\ kHz;$