

49. We use $v_S = r\omega$ (with $r = 0.600$ m and $\omega = 15.0$ rad/s) for the linear speed during circular motion, and Eq. 18-47 for the Doppler effect (where $f = 540$ Hz, and $v = 343$ m/s for the speed of sound).

$$f' = f \left(\frac{v + 0}{v \pm v_S} \right) = \begin{cases} 526 \text{ Hz} & \text{for } + \text{ choice} \\ 555 \text{ Hz} & \text{for } - \text{ choice} \end{cases}$$