

Physics 102-Rec
Quiz#2-Sect.24
Chapter 16

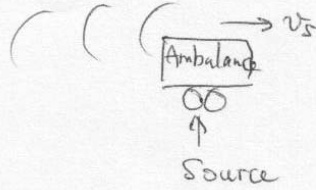
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Name:

Key

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A car is following an ambulance moving at a speed of 80 km/h and emitting sound waves with a frequency of 1000 Hz. The frequency heard by the car driver is 1060 Hz. What is the speed of the ambulance? The speed of sound is 340 m/s.



$$f_D = f_s \frac{v + v_D}{v + v_S}$$

$$v_S = 80 \text{ km/h} = 22.2 \text{ m/s}$$

$$1060 = 1000 \frac{340 + v_D}{340 + 22.2}$$

$$340 + v_D = 1.06 \times 362.2 = 383.9$$

$$\Rightarrow v_D = 43.9 \text{ m/s}$$