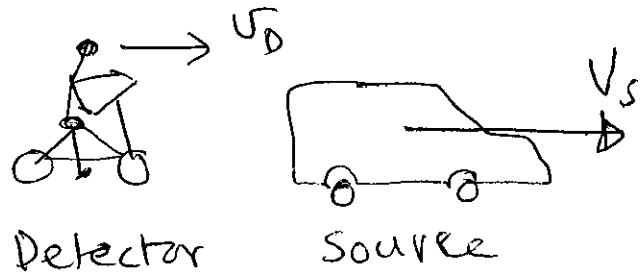


A truck emits sound with a frequency of 620 Hz. A person is riding a bike that moves at a speed of 3.0 m/s and is following the truck. If the person hears a frequency of 560 Hz, how fast is the truck moving? Take the speed of sound in air as 343 m/s.

$$f' = f \frac{v \pm v_D}{v \pm v_S}$$



$$f' = f \frac{v + v_D}{v + v_S}$$

Detector approaches source

source moving away from detector

$$560 = 620 \frac{343 + 3}{343 + v_S}$$

$$\frac{56}{62} (343 + v_S) = 346$$

$$v_S = \frac{62}{56} 346 - 343$$

$$= 40 \text{ m/s}$$

04 Sep	11 Sep	18 Sep	25 Sep	2 Oct	9 Oct	23 Oct	30 Oct	6 Nov	13 Nov	20 Nov	27 Nov	4 Dec	11 Dec	18 Dec	
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