

53. In this case, the intruder is moving *away* from the source with a speed  $u$  satisfying  $u/v \ll 1$ . The Doppler shift (with  $u = -0.950 \text{ m/s}$ ) leads to

$$f_{\text{beat}} = |f_r - f_s| \approx \frac{2|u|}{v} f_s = \frac{2(0.95 \text{ m/s})(28.0 \text{ kHz})}{343 \text{ m/s}} = 155 \text{ Hz} .$$