$$\text{speed of wave} \quad = \quad \text{(frequency)(wavelength)}$$

$$\begin{aligned} v_s &= f\lambda \\ c &= f\lambda \\ f &= \frac{1}{T} \\ T &= \frac{1}{f} \end{aligned}$$

$$(\Delta t)_{\text{car}} = \frac{1}{\gamma}\,(\Delta t)_{\text{Fred}}$$

$$T_{\text{car}} = \frac{1}{\gamma}\,T_{\text{Fred}}$$

$$f_{\text{car}} = \gamma\, f_{\text{Fred}}$$

$$f_{\text{obs}} = f_{\text{source}}\,\frac{\sqrt{1-(v/c)}}{\sqrt{1+(v/c)}}$$