Dopplerov jav

Pozorovateľ sa hýbe:

$$\circ \quad \boldsymbol{f}_{x} = \frac{\boldsymbol{v}_{x}}{\lambda}$$

$$\circ \quad f_1 = \frac{v+u}{a}$$

$$\begin{array}{ll}
\circ & f_x = \frac{v_x}{\lambda} \\
\circ & f_1 = \frac{v+u}{\lambda} \\
\circ & f_1 = \frac{v+u}{\frac{v}{f}} = \frac{v+u}{u}f
\end{array}$$

o Približuje sa:

$$f_1 = \left(1 + \frac{u}{v}\right)f$$

Odďaľuje sa:

$$f_1 = \left(1 - \frac{u}{v}\right) f$$

Zdroj sa hýbe

$$\circ \lambda_1 = \frac{v+w}{f}$$

o
$$\lambda_1 = \frac{v+w}{f}$$
o $f_1 = \frac{v}{\lambda_1} = \frac{v}{v+w} = \frac{v}{v+w}f$
o $f_1 = \left(\frac{v+w}{v}\right)^{-1}f$
o Približuje sa:

$$\circ \quad f_1 = \left(\frac{v+w}{v}\right)^{-1} f$$

$$f_1 = \left(1 + \frac{w}{v}\right)^{-1} f$$
Odďaľuje sa:

$$f_1 = \left(1 - \frac{w}{v}\right)^{-1} f$$