$$\lambda_f = \left[\lambda'_i + \frac{2h}{m_e c}\right]\sqrt{\frac{(1-v/c)}{(1+v/c)}}$$

$$\lambda_f = \lambda'_f\sqrt{\frac{(1-v/c)}{(1+v/c)}}$$

$$= \left[\lambda'_i + \frac{2h}{m_e c}\right]\sqrt{\frac{(1-v/c)}{(1+v/c)}}$$

$$= \left[\left(\lambda_i\sqrt{\frac{(1-v/c)}{(1+v/c)}}\right) + \frac{2h}{m_e c}\right]\sqrt{\frac{(1-v/c)}{(1+v/c)}}$$

$$\lambda'_i \gg \frac{2h}{m_e c}$$

$$\lambda'_i + \frac{2h}{m_e c} \simeq \lambda'_i$$

$$\left[\lambda'_i + \frac{2h}{m_e c}\right] \simeq \lambda'_i$$

$$\lambda_f \simeq \lambda'_i\sqrt{\frac{(1-v/c)}{(1+v/c)}}$$

$$\simeq \lambda_i\sqrt{\frac{(1-v/c)}{(1+v/c)}}\sqrt{\frac{(1-v/c)}{(1+v/c)}}$$

$$\simeq \lambda_i\left[\frac{(1-v/c)}{(1+v/c)}\right]$$

$$\simeq \lambda_i\left[\frac{(1-v/c)}{2}\right]$$

$$1 - \frac{v}{c} \simeq 2\left(\frac{\lambda_f}{\lambda_i}\right)$$

$$\frac{v}{c} \simeq 1 - 2\left(\frac{\lambda_f}{\lambda_i}\right)$$