HW 5-2 Soln)

$$\lambda_{\gamma f} - \lambda_{\gamma i} = \frac{h}{m_O c}(1 - \cos\phi).$$

The Compton wavelength of a muon is

$$\frac{h}{m_\mu c} = \frac{6.63 \times 10^{-34}}{1.88 \times 10^{-28}(3 \times 10^{8)}} = 1.176 \times 10^{-14}\, m = 0.0001176\ \text{Å}$$

$$\lambda_{\gamma f} - \lambda_{\gamma i} = \Delta\lambda_\gamma = \frac{h}{m_\mu c}(1 - \cos\phi) = 0.0001176(1 - \cos 60^o) = 0.000059\ \text{Å}$$

That's gonna be difficult to measure.