5.24 Three scattering mechanisms are present in a particular semiconductor material. If only the first scattering mechanism were present, the mobility would be $\mu_1 = 2000$ cm^2/V-s, if only the second mechanism were present, the mobility would be $\mu_2 = 1500$ cm^2/V-s, and if only the third mechanism were present, the mobility would be $\mu_3 = 500$ cm^2/V-s. What is the net mobility?

Use an extended version of (5.18),

$$\frac{1}{\mu} = \frac{1}{\mu_1} + \frac{1}{\mu_2} + \frac{1}{\mu_3}$$

$$= \frac{1}{2000} + \frac{1}{1500} + \frac{1}{500}$$

$$= 0.0031\overline{66}$$

$$\Rightarrow \underline{\mu = 315.79 \text{ cm}^2/\text{V}\cdot\text{s}}$$