1. The $\pi^+$ meson has a mean lifetime (at rest) of $2.6 \times 10^{-8}$ s. Its principal decay modes are $\mu^+\nu_\mu$ and $e^+\nu_e$ with branching fractions of approximately 0.99988 and 0.00012, respectively. Determine the partial transition rates.

2. Williams, problem 2.8.

3. Williams, problem 2.11 (assume a 4 liter sample in 2.3).

4. Williams, problem 2.12 (except, let the thickness be 0.05 kg/m$^2$).

5. Williams, problem 2.10 (This is a challenging but interesting problem, offered for extra credit). Skip the first two lines that ask you to write the law of radioactive decay and define the half life and mean life and the relation between them. [There are online tips for this problem linked to the main assignments page.]