**HW# 3-NT-Ch-9-T172**

**Prob: 9.2** Sketch the differential energy spectrum for the integral spectrum shown in the figure below.

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**Prob: 9.4:** If the energy resolution of a NaI(Tl) scintillator system is 11 % at 600 keV, what is the width Γ of a peak at that energy?

**Prob: 9.6** Prove that if a detection system is known to be linear, the calibration constants are given by:



where **El** and **E2** are two energies recorded in channels C1 and C2 respectively.

**Prob: 9.8** Shown in the following figure is the spectrum of 22Na ,with its decay scheme to determine the calibration constants of the MCA that recorded this spectrum, based on the two peaks of the 22Na spectrum. The channel number cannot be read exactly. What is the uncertainty of the calibration constants *a1* and *a2* if the uncertainty in reading the channel is one channel for either peak?



**Prob: 9.10:** Consider the two peaks shown in the accompanying figure. How does the peak at *E1* affect the width of the peak at *E2* and vice versa? What is the width **Γ** for either peak?

