**QUESTION:** ***Moderated neutron spectra all seem to end up with the characteristic one-over-E shape (i.e., slope minus one on a plot of log fluence vs log E). Is there a physical / mathematical reason why this is the case?***

**ANSWER:** For purely scattering media and for low energies, the solution for the neutron flux as a function of energy in an infinite medium is

$$\phi(E) \sim \frac{S}{E\Sigma_s(E)},$$

where S = source.

At these low energies the scattering cross section $\Sigma_s(E)$ is approximately constant; therefore,

$$\phi(E) \sim \frac{S}{E}.$$

Even in finite media with low to moderate absorption, the flux shows this 1/E behavior at low energies.

N. Tsoulfanidis
Email: tsoul@umr.edu