Abstract Submitted
for the DNP06 Meeting of
The American Physical Society

Variable aggregate cross sections and RMS mean free paths STEWART BREKKE[1], Northeastern Illinois University — In a previous paper it was suggested that the area cross sections of nuclei and particles was a variable given by the formula s = (p)b^2 where b = [Acos 2(p)ft]^2 due to nuclear vibration so that s =(p)[Acos 2(p)ft]^2, a variable cross section using a simple oscillator. If the aggregate cross section =n(Area)(s)dx, using the variable nuclear cross section would = n(Area)(p)[Acos2 (p)ft]^2 dx. If the maximum value for cos=1, aggregate variable cross section = n(Area)(p)A^2. RMS $\cos^2$ = (1/2), so that the aggregate variable nuclear cross section has an average value= .5n(Area)pA^2. The mean free path also uses the area cross section so that l =1/n(s). Substituting for s the variable nuclear mean free path = 1/n(p)[Acos2(p)ft. If cos max = 1, the nuclear maximum free path = 1/n(p)A^2.RMS average mean nuclear free path = 2/n(p)A^2. b = the impact parameter, A = the amplitude of nuclear motion and Acos2(p)ft is the nuclear oscillator. In all cases Acos2(p)ft is greater than the nuclear radius.

[1]refer to previous paper on variable cross sections and nuclear barrier heights

Stewart Brekke
Northeastern Illinois University

Date submitted: 08 Aug 2006 Electronic form version 1.4