Abstract Submitted
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Low Energy Nuclear Reactions Explained by Nuclear Oscillation–The End of Tunnelling STEWART BREKKE, Northeastern Illinois University — Low energy nuclear reactions can be explained through a nuclear oscillation factor using classical mechanics eliminating the need for a tunnelling explanation. Consider an incoming positive charge approaching vibrating nucleus. If the amplitudes of oscillating are equal in all directions and x the position of the incoming charge to the nucleus, then the position of the particle is r = $[(x + A\cos X)^2 + (A\cos Y)^2 + (A\cos Z)^2]^{1/2}$. Then KE needed = Barrier Height = $kQ(n)q(i)/[(x + A\cos X)^2 + (A\cos Y)^2 + (A\cos Z)^2]^{1/2}$. If the nuclear reaction takes place on the x-axis and contact with the nuclear surface is considered to be contact with the nuclear well, x = AcosX, the magnitude for r after collecting terms is r = $[4(A\cos X)^2 + (A\cos Y)^2 + (A\cos Z)^2]^{1/2}$. The KE needed to mount the barrier height is KE = $kQ(n)q(i)/[4(A\cos X)^2 + (A\cos Y)^2 + (A\cos Z)^2]^{1/2}$. If the maximum for all cos values is +1 and for all minimum values is -1, r = $(6)^{1/2}$A. and average cos value is RMScos = $(1/2)^{1/2}$, r = $(3)^{1/2}$A. For a static nucleus r = 0. The barrier height minimum is KE = $kQ(n)q(i)/(6)^{1/2}$A, maximun KE = kQ(n)q(i)/0 and average KE = $k(q(n)q(i)/(3)^{1/2}$A. Therefore the Coulomb barrier is different at different times accounting classically for all nuclear reactions.

Stewart Brekke
Northeastern Illinois University

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