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Variable Nuclear Barrier Heights Due To Nuclear Vibrations Thereby Allowing Some Low Energy Nuclear Reactions Without The Artifice of Tunneling STEWART BREKKE[1], Northeastern Illinois Univ — Nuclear barrier heights are often thought to be static repulsive forces repelling an incoming positive charge such as a proton from contacting the positive nucleus generating a nuclear reaction unless the coming charge has sufficient kinetic energy to overcome the positive repulsive nuclear potential energy. Some low energy nuclear occurred which could not be explained by classical physics. "tunneling" was invented in order to explain phenomenon. All nuclei are vibrating changing their position in relation to the incoming positive charge. The barrier height-incoming charge value is position dependent therefore the barrier height is repeatedly changing, If the barrier height is lower, some previously thought impossible nuclear reactions may take place obviating the need for the "tunneling" explanation.If the nucleus is a three dimensional oscillator where $r = ((AcosX)^2 + (AcosY)^2 + (AcosZ)^2)^(1/2)$. If $cos = 0$,$r = 0$ and V= infinitely high. If $cos = RMScos, r = 1.22A$ average. If $cos = 1, r = 1.707A$ max. Thus, if $V = k(q_1)(q_2)/r$, the barrier height ranges from infinitely high, to $V = 0.816q_1q_2/A$ on average,to a low of $V = 0.577(q_1)(q_2)/A$ where A = average amplitude of nuclear vibration, (q_1) is the nuclear charge, (q_2) is the incoming particle charge.

[1]several similar papers have been presented at various APS national and sectional meetings starting about 2005.

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