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Low Energy Nuclear Fusion Possible w/o Artifice of Tunneling

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Low energy nuclear reactions such as deuterium-deuterium fusion on the sun can occur w/o tunneling if nuclear vibration is taken into account. The temperature needed for such fusion is $4.0 \times 10^7 K$. The nuclear barrier height to be overcome is $8.286 \times 10^{-15} j$ using the equipartition of energy formula $1/2mv^2 = 3/2kT$. Using a formula stated in an earlier paper in which the both nuclei are assumed to be oscillating which is KE needed = $kq_1q_2/[3A(3\cos^2X)^{1/2}]$, where A is the average amplitude of oscillation equal in all directions, RMS value for the barrier height is $kq_1q_2/3A(6)^{1/2}$ with a maximum barrier height of infinity for no nuclear oscillation. Solving for A, the average amplitude of vibration needed for two deuterium nuclei to fuse is approximately 3.79 fermis.

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