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The Average Uncertainty of a Three Dimensional Nuclear Oscillator STEWART BREKKE, Northeastern Illinois University (former grad student) — Consider a three dimensional nuclear oscillator in a solid. The position vector is r = $((A \cos a))^2 + (B \cos b)^2 + (C \cos c)^2)^{1/2}$, where A,B,C are amplitudes of oscillation. If A=B=C, Δ p $\geq$ h/2(π)(Δ r), p(av)is the average momentum of the oscillator, a=b=c, then Δ p(av)= h/2(π)($3\Delta A \cos^2)^{1/2}$, if Δ A is the uncertainty in the amplitude. The maximum cos = 1, minimum cos = 0 and RMS cos =0.707(average) so max.uncertainty Δ p(av)= infinite, min uncertainty Δ p(av)$\geq$ h/10.83Δ A and average uncertainty Δ p (av)=h/3.45 ΔA. This paper suggests the concept of average uncertainty.

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