

Quiz #9 (Time evolution of Superpositions)

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Quantum Mechanics

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Prob. 1(3)

Determine the angular oscillation frequency of the probability density function for each of following quantum systems. If the system has more than one oscillation frequencies, choose the strongest frequency component.

(a) Superposition of the lowest two eigen states for a particle with mass M in an infinite barrier quantum well having width L .

(b) The coherent state for a harmonic oscillator made up of a particle with mass M attached to a spring with string constant K .

(c) Superposition of all the eigen states for a particle of mass M in an infinite barrier quantum well having width L . It is known that at $t=0$ the probability of finding the particle within the well is uniform in the well but zero outside the well.