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Position, Momentum & Energy Measurement Pretest

University of Colorado

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NOTE!! Please type in your CU userid (that's the username you use to log in to CULearn. We do NOT want your password. It probably looks like your last name, perhaps with a few extra characters. Note that it is definitely NOT your numerical (9 digit) student ID!!

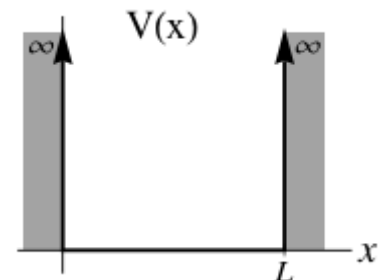
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Please type your CU userid:

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A particle is in the infinite square well potential shown at right.

At time $t = 0$, the energy of the system is measured and found to be E_2 , the first excited state energy.



Q1: a) Immediately after the measurement, is the system in an eigenstate of position?

Required.

Explain your reasoning.

Required.

At time $t_1 > 0$ you measure the position of the particle and find that it is located at $x = 0.3L$.

Suppose a few minutes later, at a time t_2 you measured the energy of the particle. (Assume that, during the time interval $t_1 < t < t_2$, the particle remains isolated from the environment.)

Q2: a) Which of the following statements would best describe the result of your energy measurement?

Required.

Select one...

b) Explain your reasoning:

Required.

Suppose that instead of measuring the energy at time t_2 , you measure the energy a very long time later. (Assume that, during the time interval between position and energy measurements, the particle remains isolated from the environment.)

Q4: a) Which of the following statements would best describe the result of your energy measurement?

Required.

Select one...

b) Explain your reasoning:

Required.



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Submit responses

Questions or Comments?

Contact the 123 tutorial pretest coordinator at uwttl123@u.washington.edu

