Physics 2605H: Worksheet I

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Problem 1. (a) If X choses to measure X_3, in (3,1), what would be the classical states in each of the occupied states?

(b) Give examples for per position states in the figure?

(c) Are the states entangled? Why do you think so?

Solution 1. (a) (3,1) collapses to X_3 (3,3) collapses to O_2 (1,1) collapses to X_1 (1,2) collapses to O_4

(b) X_1 is entangled with O_2 O_2 is entangled with X_3 X_3 is entangled with O_4 O_4 is entangled with X_1

(c) Yes because collapsing any state will result in the collapse of all other states.

Problem 2. (a) X will win. Regardless of how O plays (2,1) is guaranteed to be X.

(b) Not really, you could force a tie by measuring O_8 in (3,2).

Solution 2.

Problem 3. Provide the game log which leads to following result or something similar.

Solution 3.