

1. (10 pts) State a comparison that analogously illustrates the concept of infinite & continuous vs. finite & discrete. Ex. all real numbers IR (infinite & continuous) a subset of integers I (finite & discrete)

2. The state of an emot-1 person, you, is given by

$$| \rangle \rangle_{\gamma} = \frac{\sqrt{2}}{2} | \rangle_{\gamma} + \frac{3i}{4} | \langle 9 \rangle_{\gamma} + \frac{\sqrt{13}}{2} | \rangle_{\gamma}$$

a) (10 pts) Which of the following LQs in the operator space ME - YOU are already normalized?

ii.
$$\hat{Q}_{M \rightarrow Y}$$
 0 4i 3

$$(ii. \quad \hat{k}_{M \rightarrow Y} \rightarrow \begin{pmatrix} \frac{12}{3J3} & -\frac{2}{3J3}i & 0 \\ \frac{2}{3J3}i & -\frac{4}{3J3} & \frac{2}{3}i \\ 0 & -\frac{2}{3}i & \frac{2}{3J3} \end{pmatrix}$$

2. (cont.)

b) (10 pts) Explain when normalization would be required & how it should be implemented.



3. Consider two observers, ALICE & BOB, whose strong-L Las in the > YOU operator space are given by

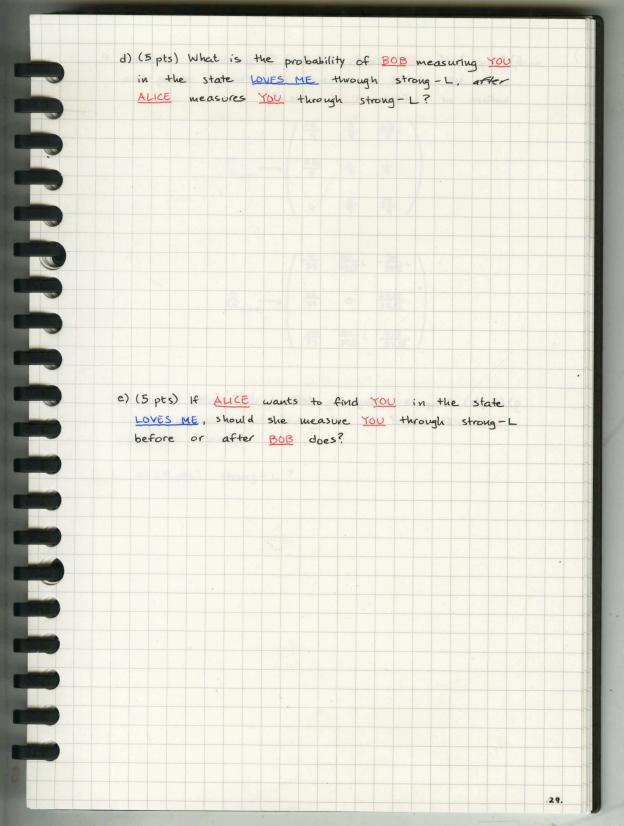
$$\begin{array}{c}
\begin{pmatrix}
2.52 & 4 \\
\hline
127 & \boxed{127} & 0
\end{pmatrix}$$

$$\begin{array}{c}
-\frac{4}{527}i & \frac{252}{127} & \frac{652}{127} \\
0 & \frac{652}{127} & \frac{252}{127}
\end{pmatrix}$$

Use the same YOU state given in problem 2.

a) (5 pts) What is the probability of ALICE measuring YOU in the state LOVES ME through strong - L, before BOB measures YOU?

b) (5 pts) What is the probability of BOB measuring YOU in the state LOVES ME through strong-L, before ALICE measures YOU? c) (5 pts) What is the probability of AUCE measuring YOU in the state LOVES ME through strong-L, after BOB measures You through strong - L?



f) (5 pts) If BOB wants to find YOU in the state LOVES ME, should be measure YOU through strong-L before or after ALICE does?

g) (5 pts) Why is strong-L defined differently for ALICE & BOB?

Using the same You state given in problem 2, what is the probability of finding YOU in the state LOVES ME through

a) (5 pts) strong - L ?

b) (5 pts) strong-Q?

c) (5 pts) strong - L followed by strong - Q?

d) (5 pts) strong - Q followed by strong - L? e) (5 pts) If I want to find YOU in the state LOVES ME, which LQ(s) should I use and in what order?

5. (5 pts) Write 2-3 sentences from your perspective defending either position on outological causality (discretization by origin or discretization by poiesis), as applied to QM, QR, or both.

EXTRA CREDIT (10 pts) ME -> YOU given by

Consider the norm-factored LQ in the operator space

Using the YOU state from problem 2, what would be the normalization factor? What is the matrix representation of the normalited LQ?

EXTRA EXTRA CREDIT (1-5 pts) Name up to five other common was not listed in lecture. (1 pt per valid LQ)