

Written Assignment 5

- Either (a) Is the quantum-mechanical wave function an objective property of the physical world, or rather a measure of our state of knowledge? Explain, *in your own words*, the obvious difficulties with each view. (You are not necessarily expected to decide between them.)
- or (b) Imagine that there is a pizza delivery store that carries 3 types of pizza: mushroom, pepperoni and onion. You order one of the three every night. It always arrives within 5 minutes, although it takes a half hour to bake a pizza. (The toppings are baked in the pizza from the beginning, not spread on top afterwards.) Sometimes you pick a type by what sounds good, and sometimes by flipping a coin. No matter what, the type that you order is always delivered on time. Tonight you have friends over and you decide to order all 3 types. The store says: “You’ll have to wait, we have only one pizza cooked now.” Assuming everyone is being honest, explain why this story violates ordinary assumptions about reality, and why it is relevant to the EPR thought experiment.

[We will get to the EPR thought experiment in lecture 20 (Thurs., 1 Nov.), but if you are planning to do your term paper on QM you should already be reading about it.]

Please submit a double-spaced Word document (‘.docx’ or ‘.doc’) of 650-1000 words on Compass (using the ‘Assignments’ link on the left-hand menu) by class time (2p) on **Thursday, 8 November**.