

Is Quantum Suicide Painless? On an Apparent Violation of the Principal Principle

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Abstract

The experimental setup of the self-referential quantum measurement, jovially known as the "quantum suicide" or the "quantum Russian roulette" is analyzed from the point of view of the Principal Principle of David Lewis. It is shown that the apparent violation of this principle---relating objective probabilities and subjective chance---in this type of thought experiment is just an illusion due to the usage of some terms and concepts ill-defined in the quantum context. We conclude that even in the case that Everett's (or some other "no-collapse") theory is a correct description of reality, we can coherently believe in equating subjective credence with objective chance in quantum-mechanical experiments. This is in agreement with results of the research on personal identity in the quantum context by Parfit and Tappenden.

Keywords: quantum mechanics, multiverse, Everett, quantum suicide, principal principle

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