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The dead-alive physicist experiment: a case-study against the hypothesis that consciousness causes the wave-function collapse in the quantum mechanical measurement process. (English) Zbl 07422239

Summary: The aim of this paper is to refute the hypothesis that the observer’s consciousness is necessary in the quantum mechanics measurement process. In order to achieve our target, we propose and investigate a variation of the Schrödinger’s cat thought experiment called “DAP”, short for “Dead-Alive Physicist”, in which a human being replaces the cat. This strategy enables us to logically disprove the consistency of the above hypothesis, and to oblige its supporters either to be trapped in solipsism or to rely on an alternative interpretation of quantum mechanics in which the conscious observer plays the sole role of acknowledging the experimental results. Our analysis hence provides support to clarify the relationship between the observer and the objects of her/his experimental observation; this and a few other implications are discussed in the fourth section and in the conclusions.

MSC:
82Bxx Equilibrium statistical mechanics

Keywords: quantum measurement; macroscopic states superposition; Schrödinger’s cat; Wigner’s friend; observer’s consciousness; wave-function collapse

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References:
[34] Hobson, A., Entanglement and the Measurement Problem (2020)

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