

How to Reconcile Modal Interpretations of Quantum Mechanics with Relativity

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Abstract

Recent no go theorems by Dickson and Clifton (1998), Arntzenius (1998) and Myrvold (2002) demonstrate that current modal interpretations are incompatible with relativity. In this paper we propose strategies for how to circumvent these theorems. We further show how these strategies can be developed into new modal interpretations in which the properties of systems are in general either holistic or relational. We explicitly write down an outline of dynamics for these properties which does not pick out a preferred foliation of spacetime.

Keywords: Quantum mechanics, modal interpretations, relational properties, relativity, Lorentz invariance.

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