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The four postulates of quantum mechanics are three

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The tensor product postulate of quantum mechanics states that the Hilbert space of a composite system is the tensor product of the components' Hilbert spaces. All current formalizations of quantum mechanics that do not contain this postulate contain some equivalent postulate or assumption (sometimes hidden). Here we give a natural definition of composite system as a set containing the component systems and show how one can logically derive the tensor product rule from the state postulate and from the measurement postulate. In other words, our paper reduces by one the number of postulates necessary to quantum mechanics.

This talk is based on the paper: G.Carcassi,L.Maccone,C.A.Aidala, The four postulates of quantum mechanics are three, Phys. Rev. Lett. 126, 110402 (2021).

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