

Abstract Submitted
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Modal Quantum Theory MICHAEL WESTMORELAND, Denison University, BENJAMIN SCHUMACHER, Kenyon College — We present a class of toy model theories similar in structure to ordinary quantum mechanics. Some of these models are based on finite fields instead of complex amplitudes. The interpretation of such theories involves only the “modal” concepts of possibility and necessity rather than quantitative probability measures. Despite its very simple structure, our toy model nevertheless includes many of the key phenomena of actual quantum systems: interference, complementarity, entanglement, nonlocality, and the impossibility of cloning. These results are detailed in arXiv:1010.2929 and arXiv:1010.5452.

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