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Decoherence and the Uncertainty Principle: Numerics ADAM LEMKE, DAVID CRAIG, Le Moyne College — We investigate the relation between decoherence and the uncertainty principle, both analytically and numerically, in some simple models of quantum measurement. In consistent histories formulations of quantum theory, probabilities may be consistently assigned only in sets of histories which decohere, i.e. in sets in which the interference among the various branches vanishes. Measurements may thus in part be construed as local processes which serve to destroy interference. We study numerically the extent to which the uncertainty principle may be interpreted as the failure of measurements of non-commuting observables to lead to decohering branches in some simple quantum measurement models.

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