APPENDIX

A THEOREM CONCERNING CONTEXT-DEPENDENT MIXTURES

Maximal Bohrian realism, the alternative to classical scientific realism put forth in chapter five, makes reality context-dependent, in the sense that properties of quantum systems are considered real only in experimental contexts wherein the corresponding observables can be measured. I claimed that in such a context it would always be possible to describe the state of the systems involved as a mixture of eigenstates of the measurable observables, even when the standard quantum mechanical rules would describe the state as a pure case. This possibility reinforces maximal Bohrian realism, because the device of mixtures has a distinctly realistic flavor, permitting, among other things, an ignorance interpretation of all probabilities involved and, more generally, allowing us to proceed as if the systems involved possessed definite but perhaps unknown values of all the measurable observables.

That one can find such a mixture in a few special cases was demonstrated by careful examination of the crucial case (iv) of our Furry-type analysis of different approaches to spin correlation measurements. I wish now to prove that such a mixture can be found in all cases.

I begin by defining the notion of an experimental con-