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Consistent Quantum Cosmology: Decohering Histories of Recollapsing FRW Universes DAVID CRAIG, State University of New York — Quantum mechanics normally requires that a history of a system be measured before the probability of that history can be meaningfully discussed. In quantum cosmology, measurement is not an available option and other strategies must be sought. "Decoherent histories" formulations of quantum theory take the hint from ordinary quantum mechanics that measurement serves to destroy interference between alternative histories and formalizes this observation into a scheme for making internally consistent quantum predictions for closed systems even in the absence of anything that resembles a classical measurement situation. These ideas have already been applied by Hartle and the author to the construction of a consistent quantum theory of recollapsing homogeneous universes – the so-called "Bianchi IX" cosmological models. In this contribution I discuss the application of this quantum theory to the example of the recollapsing Friedmann-Robertson- Walker cosmology. In particular, coarse grainings suitable to characterize quasiclassical behavior are described, and the branch wave functions for quasiclassical FRW cosmologies are exhibited.

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