

Abstract Submitted
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Consistent quantum prediction in spin-foam quantum cosmology

DAVID CRAIG, Oregon State Univ — A complete “consistent histories” framework is given for a covariant “spin-foam” quantum cosmological model, a highly symmetry-reduced (FLRW) model of covariant loop quantum gravity. A decoherence functional is constructed through which probabilities may be consistently extracted from quantum amplitudes. Branch wave functions corresponding to different possible quantum histories of the universe are described, such as whether the universe “bounces” at small volume or becomes singular. We discuss the construction and calculation of such branch wave functions, with an emphasis on the crucial role played by the decoherence of histories in arriving at self-consistent quantum predictions for these closed quantum systems. [Based on joint work with Parampreet Singh]

David Craig
Oregon State Univ

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