

Abstract Submitted
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Observables and Hamilton-Jacobi approaches to general relativity DONALD SALISBURY, Austin College — There were in the 1950s through the 1970s two dominant schools of thought regarding the nature of observables in Einstein's general theory of relativity, motivated by distinct foundational principles. The Wheeler school and associates including Arnowit, Deser, Misner, B. DeWitt, and Kuchar placed their emphasis on the quantum superposition of observables, recognizing that the measurable amplitudes needed to be insensitive to the choice of spacetime coordinates. Bergmann and Komar, on the other hand, regarded the identification of diffeomorphism invariants in a classical Hamiltonian system as an essential initial step in the formulation of a quantum theory of gravity. Both approaches, however, appealed to a gravitational Hamilton-Jacobi theory. In this talk I will investigate the manner in which the conflicting principles underlying the two approaches determined the questions that were addressed and the interpretation of proposed solutions. Their culminating theoretical outcomes in the 1970s are surprisingly similar.

Donald Salisbury
Austin College

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