

Abstract Submitted  
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**Spinfoam Cosmology with the Proper Vertex**<sup>1</sup> ILYA VILENSKY,  
Florida Atlantic University — A modification of the EPRL vertex amplitude in the spin-foam framework of quantum gravity - so-called "proper vertex amplitude" - has been developed to enable correct semi-classical behavior to conform to the classical Regge calculus. The proper vertex amplitude is defined by projecting to the single gravitational sector. The amplitude is recast into an exponentiated form and we derive the asymptotic form of the projector part of the action. This enables us to study the asymptotics of the proper vertex by applying extended stationary phase methods. We use the proper vertex amplitude to investigate transition amplitudes between coherent quantum boundary states of cosmological geometries. In particular, Hartle-Hawking no-boundary states are computed in the proper vertex framework. We confirm that in the classical limit the Hartle-Hawking wavefunction satisfies the Hamiltonian constraint.

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