Quantum Properties of Black Holes: Further Understanding the Double Cone Spacetime[1] CLAIRE KECKLEY, Tulane University — The double cone spacetime is a black hole topology created by Douglass Stanford and Stephen Shenker at Stanford University. This topology is an essential part of a calculation which demonstrates the quantum properties of black holes and could ultimately help show how quantum mechanics and general relativity fit together. It initially seemed that a freely falling object should enter a region which was not accounted for on this topology after a finite amount of proper time, so it was unclear whether the double cone spacetime would give the correct answer to the calculation. I completed an analysis of the topology after a mathematical shift into the complex plane and showed that, because the topology is geodesically complete, the double cone spacetime is valid for use in the calculation.

Claire Keckley
Tulane University

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