

Abstract Submitted  
for the APR14 Meeting of  
The American Physical Society

**Hawking radiation in loop quantum gravity** JORGE PULLIN,  
Louisiana State Univ - Baton Rouge, RODOLFO GAMBINI, Universidad de la  
Republica Oriental del Uruguay — We use the recently found exact solution rep-  
resenting a spherically symmetric quantum space-time to perform a quantum field  
theory in quantum space time analysis of a scalar field. The main influence of the  
presence of the quantum geometry is to yield a theory that effectively lives on a lat-  
tice due to the discreteness of space-time in loop quantum gravity. This in particular  
has consequences for the structure of the quantum vacua. Essentially all singular  
behaviors are removed by the discreteness. The resulting formula for the Hawking  
radiation suffers only small corrections, at least for macroscopic black holes and  
their natural frequencies and coincides with a formula that had been heuristically  
derived in the past.

Jorge Pullin  
Louisiana State Univ - Baton Rouge

Date submitted: 09 Jan 2014

Electronic form version 1.4