

Special Issue on Quantum Information and Holography

CALL FOR PAPERS

The discovery of AdS/CFT and, more generally, the gauge/gravity correspondence has led to many new insights in quantum gravity and quantum field theory. Its relevance in theoretical physics is with no doubt exceptional, since it provides one of the few nonperturbative definitions of string theory, a quantum theory of gravity. In recent years, the AdS/CFT community has borrowed various tools of quantum information theory. Quantities such as complexity and entanglement in its various guises have been extremely useful to understand the emergence of bulk space-time from quantum field theory degrees of freedom. Models based on tensor networks, quantum circuits, and quantum error correcting codes have proved handy in describing black holes, solving various long-standing problems, puzzles, and paradoxes, and leading to a broader understanding of general theories of quantum gravity.

In this special issue, we propose to focus on the interplay between different aspects of quantum information theory and holography, with applications to both, quantum aspects of black holes, and gravity in general, and strongly coupled gauge theories. The main goal is to bring together a collection of original contributions and review papers written not only by experts, but also by young researchers.

Potential topics include but are not limited to the following:

- ▶ Aspects of entanglement entropy and complexity
- ▶ Black hole entropy and thermodynamics
- ▶ Chaos and fast scrambling of black holes
- ▶ AdS₂ holography and the SYK model
- ▶ Wormholes and ER=EPR
- ▶ The information loss paradox
- ▶ Tensor networks and quantum circuits
- ▶ Quantum error correction codes
- ▶ Conformal bootstrap methods
- ▶ Numerical tools for holography and quantum information

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/ahp/qih/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

Lead Guest Editor

Juan F. Pedraza, University of Amsterdam, Amsterdam, Netherlands
jpedraza@uva.nl

Guest Editors

Elena Caceres, University of Texas, Austin, USA
elenac@utexas.edu

Cynthia Keeler, Arizona State University, Tempe, USA
ckeeler1@asu.edu

Sandipan Kundu, Johns Hopkins University, Baltimore, USA
kundu@jhu.edu

Esperanza Lopez, Instituto de Fisica Teorica, Madrid, Spain
esperanza.lopez@uam.es

Submission Deadline

Friday, 16 November 2018

Publication Date

April 2019