Advances in High Energy Physics

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Special Issue on

Applications of the Holographic Duality to Strongly Coupled Quantum Systems

CALL FOR PAPERS

The holographic duality relates the dynamics of a lower dimensional quantum field theory to a dual gravitational/string theory living in higher dimensions. An intrinsic feature that makes the duality very applicable is that while the dual field theory involves dynamics with strongly coupled degrees of freedom, the gravity side is well described by generalization of general relativity, thus providing an invaluable source of physical intuition as well as computational power to deal with strongly coupled problems.

Constructing, exploring, and categorizing the diverse states of matter, for which gauge/gravity duality makes available, are a prominent theme in current research. Progress in applying the holographic duality has recently moved towards more concrete holographic theory building for strongly interacting systems, under the control of the general framework of gauge/gravity duality, to obtain experimentally verifiable predictions. Interesting and uncovered issues, for example, relate to novel gravitational background describing unconventional phases of matter and transport phenomena, phase diagrams with various competing orders, dynamical response of systems far from equilibrium, and so forth.

We invite researchers to contribute original papers as well as review articles that seek to address recent advances on applications of the holographic duality to strongly coupled systems.

Potential topics include but are not limited to the following:

- Novel phases and phase diagrams in strongly coupled theories
- Applications to modeling condensed matter phenomena, AdS/CMT
- Holographic entanglement, emergence of spacetime, and quantum information
- Holography near and far from equilibrium dynamics
- Fluid/gravity correspondence
- Holography and quark gluon plasma, AdS/QCD
- Aspects of black hole physics and AdS geometry

Authors can submit their manuscripts through the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/ahep/ahd/.

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

Lead Guest Editor
Li Li, Lehigh University, Bethlehem, USA
lil416@lehigh.edu

Guest Editors
Hai-Qing Zhang, Utrecht University, Utrecht, Netherlands
h.q.zhang@uu.nl

Song He, Max Planck Institute for Gravitational Physics, Golm, Germany
hesong17@gmail.com

Zhang-Yu Nie, Kunming University of Science and Technology, Kunming, China
niezy@kmust.edu.cn

Yun-Long Zhang, Asia Pacific Center for Theoretical Physics, Pohang, Republic of Korea
yunlong.zhang@apctp.org

Bum-Hoon Lee, Sogang University, Seoul, Republic of Korea
bhl@sogang.ac.kr

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