The **Galileo Galilei Institute** for Theoretical Physics
Arcetri, Florence

Holographic Methods for Strongly Coupled Systems

March 9, 2015 April 30, 2015

The methods of holography - the mapping between quantum field theories and higher dimensional theories of gravity - have reached a mature development stage, where they can be used as tools to understand strongly interacting systems arising in a variety of important physical problems. Formal developments (for instance in the light of integrability) beautifully complement applications towards experimentally accessible systems, at low energy (condensed matter) as well as at high-energy (QCD, electroweak symmetry breaking, dynamical supersymmetry breaking). In view of relevant data coming from LHC experiments as well as of the discovery of novel materials which evade standard descriptions based on weakly interacting quasi-particles (e.g. strange metals, high-Tc superconductors, topological insulators) together with the development of advanced techniques (from nanotechnologies to cold atoms simulations) which have opened new windows to the study of non-equilibrium physics, it is crucial for the international community of theoretical physicists to identify priorities and coordinate efforts to better understand these phenomena.

With this aim in mind, the Workshop will be mainly focused on applications of the holographic correspondence to particle, nuclear, condensed matter and gravitational physics. The goal would be to coordinate the research activity on the field, to identify objectives and priorities and to encourage and facilitate international collaborations.

Topics:

- Holographic QCD
- Holography and condensed matter
- Holography and out of equilibrium physics
- Holography, entanglement and information
- Holography and cosmology
- Advances in supersymmetric gauge theories and integrability

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