

New Perspectives in String Theory Galileo Galilei Institute Arcetri (FI)

Organizers

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Period: 6 April - 19 June 2009

Deadline for applications: 30 September 2008
(Later applications will be considered)

Abstract

Starting from Veneziano's 1968 amplitude, String Theory has experienced forty years of intense development and brought to astonishing achievements in several areas of Particle Physics and Cosmology. It is time to try and identify its basic principles. The proposed twelve-week extended workshop aims at addressing the most acute and urgent problems in String Theory, including non-perturbative formulations, vacuum stabilization, and holographic interpretation, and to draw lines of attack for future investigations. The workshop will start with a short opening Conference in early April. A longer mid-term School will take place in June. The "Strings 2009" Conference to be held in Rome will mark the end of the workshop late in June.

Topics

- Quest for basic principles of string theory
- Covariant quantization and pure spinor approach
- Gauged supergravity and flux compactifications
- D-brane instantons and other non-perturbative effects
- Topological strings and microstate counting
- Black Holes and Attractors
- Holographic correspondence and higher spin theories
- String dynamics in curved and time-dependent backgrounds
- Applications to particle physics and cosmology

Preview

The workshop will be run in a rather flexible fashion. Plenty of time will be devoted to informal discussions and meetings in order to allow participants to identify and possibly tackle together common open problems. Teams of collaborating researchers will be encouraged to participate in the workshop.

The number of talks delivered mostly by workshop participants will be limited to three each week. The recommended format will be that of a blackboard talk. Some pedagogical lectures and more technical talks, covering the latest developments in String Theory, will be scheduled if appropriate.

Informal discussion sessions will be partly organized and partly left to the initiative of the participants. An opening three-day conference will be held at the beginning of the workshop, early in April. The purpose of the opening conference is to give participants an opportunity to get together in order to stimulate intense scientific exchange from the very start. A longer school will be held in June on the main topics of the workshop: Basic principles (Witten, TBC), Covariant quantization and pure spinor approach (Berkovits, TBC), Gauged supergravity and flux compactifications (Zwirner, TBC), D-brane instantons and other non-perturbative effects (Cvetič, TBC), Topological strings and microstate counting (Ooguri, TBC), Holographic correspondence (Maldacena, TBC), Black Holes and Attractors (Ferrara, TBC), Higher Spin Theories (Vasiliev, TBC), String dynamics in curved and time-dependent backgrounds (Kutasov, TBC).

In addition to the key and other senior participants, the workshop will be open to a number of younger participants, who will participate for shorter periods and with partial support from their home institutions in order to attend series of lectures, mini-schools and pedagogical seminars.