

IRTG PhD days 2011



Tuesday 4 October 2011 - Wednesday 5 October 2011

Desy

Scientific Programme



The Collaborative Research Center 676 (SFB 676) at Hamburg University and the cluster of excellence LEXI at Hamburg University and DESY are research programs at the interface of particle physics, string theory and cosmology. Significant developments are taking place in each of these fields, and far-reaching scientific results are expected in the course of the next 20 years.

Many PhD students are involved in the different SFB and LEXI research fields and organized in a structured graduate program, the "Integrated Research Training Group" (IRTG). In order to benefit from the given experience in different fields, this two-days workshop is meant to bring PhD students and experienced international researchers together and create a platform for discussions, exchange and new ideas.

Besides **two main lecture courses** given by highly experienced speakers, PhD students will get the opportunity to present and discuss their own work related to the SFB and LEXI research topics.

Lecture "Mysteries of modern physics"

John Ellis (CERN & King's College London) will give a three-hours lecture on "Mysteries of modern physics" (Tuesday).

Abstract:

Two of the hottest topics in physics at the LHC are the searches for the Higgs boson and supersymmetry. In this lecture I will summarize the motivations for these possible new pieces of physics, review the current status of the searches, and discuss their future prospects.

Lecture "Physics at the smallest scales"

Carlo Rovelli (CPT Marseille) will talk in a three-hours lecture about "Physics at the smallest scales - an introduction to quantum gravity" (Wednesday).

Abstract:

I discuss the reasons for searching a quantum theory of gravity, the difficulties of the search and the presents state of the art of the research. I focus on the need for a deep modification of the notions of space and time that appear to be implied by this problem. I discuss in particular the status of loop approach to quantum gravity and its results on the granularity of space at the Planck scale and the possibility of resolving the Big Bang singularity.

Student session

PhD students of IRTG present in a short talk their work to other students.