



The Galileo Galilei Institute for Theoretical Physics
Arcetri, Florence

Conformal Field Theories and Renormalization Group Flows in Dimensions $d > 2$

May 23, 2016 - July 8, 2016

Topics:

- Conformal bootstrap approach to CFTs in diverse dimensions
- Applications to condensed matter, statistical, and high-energy physics
- Monotonicity constraints on RG flows
- Truncated conformal space approach to strongly coupled RG flows
- Connections to the AdS/CFT correspondence and quantum gravity
- Connections to $N=4$ Super-Yang-Mills theory and integrability

This workshop highlights the project of classifying and solving Conformal Field Theories (CFTs) and renormalization group (RG) flows between them. From critical phenomena to QCD to quantum gravity, many themes at the frontiers of theoretical physics converge on this endeavor. Our focus will be on strongly coupled theories, and on spacetime dimensions greater than two, where a lot remains to be uncovered compared to the relatively well-explored two-dimensional case. A central role will be played by the bootstrap philosophy - the idea that fundamental principles can be used to determine dynamics. The goal will be to explore general constraints on conformal theories and RG flows which can be established non-perturbatively and without relying on Lagrangians, and then to use these constraints for obtaining definite predictions.

Organizing Committee:

Andrea Cappelli (INFN, Florence)
Jared Kaplan (Johns Hopkins University, Baltimore)
Joao Penedones (University of Porto)
David Poland (Yale University, New Haven)
Leonardo Rastelli (YITP, Stony Brook University)
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