



NOVEMBER 29
2018
14:50

SOME PATHWAYS IN THEORETICAL PHYSICS

14:50 **A. SAGNOTTI** (Scuola Normale Superiore)
Welcome

15:00 **G. DALL'AGATA** (Università di Padova)
Superstring Phenomenology?
I will argue that string phenomenology is not an oximoron, but a necessary framework to understand the physics of the fundamental interactions.

15:50 **Discussion**

16:00 **A. NICOLIS** (Columbia University)
Effective field theories for phases of matter and Cosmology
I will review some modern applications of effective field theories, outside their traditional particle physics domain. In particular, I will focus on spontaneous symmetry breaking for spacetime symmetries. The effective theories for the associated Goldstone excitations capture the low-energy/long-distance dynamics of a number of physical systems, from ordinary macroscopic media (solids, fluids, superfluids, supersolids) to more exotic cosmological ones.

16:50 **Discussion**

17:00 **F. SANNINO** (University of Southern Denmark)
Charting Fundamental Interactions
I will overview of the state-of-the-art in Particle Physics, before introducing the novel nonsupersymmetric Wilsonian theories of fundamental interactions of safe rather than free nature. Within the supersymmetric framework, I will present recent exact results for safe superconformal theories and show their impact when searching for grand unification in Particle Physics. Finally, I will elaborate on time-honored paradigms and novel avenues for (Astro) Particle Physics and Cosmology.

17:50 **Discussion**

18:00 **Conclusion**

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