String Theory and Inflation

Report of Contributions

https://agenda.infn.it/e/11846

Contribution ID: **0** Type: **not specified**

Welcome

Tuesday, 20 September 2016 09:50 (10 minutes)

Contribution ID: **1** Type: **not specified**

Inflation, SUSY Breaking and Cosmological Constant

Tuesday, 20 September 2016 10:00 (45 minutes)

I will describe a large class of inflationary models, cosmological attractors, which can describe not only inflation, but also SUSY breaking and the cosmological constant. The simplest models of this class involve nilpotent chiral superfields. This allows to describe small SUSY breaking which does not lead to the infamous cosmological Polonyi field problem.

Presenter: Prof. LINDE, Andrei (Stanford University)

Contribution ID: **2** Type: **not specified**

Testing Inflation with the CMB: Past and Future

Tuesday, 20 September 2016 10:50 (45 minutes)

Precise observations of the cosmic microwave background (CMB) have substantially narrowed the field of viable models for the early universe and for generating the seeds of large-scale structure. I will review the constraints imposed on models of inflation by current CMB observations and survey the future constraints to be anticipated, in particular through the search for B-mode polarization of the CMB.

Presenter: Dr BUCHER, Martin (APC Paris 7, CNRS and PLANCK)

Contribution ID: **3** Type: **not specified**

Reflections on SUSY Breaking and the Low-l CMB

Tuesday, 20 September 2016 12:10 (45 minutes)

If Supersymmetry were realized in Nature, it ought to have been broken at a high scale during inflation. Indirect signs of this epoch have shown up in the results of the Planck satellite, which have provided evidence for a non-trivial CMB spectral tilt ns<1. I elaborate on models on "brane supersymmetry breaking", a peculiar and natural mechanism drawn from String Theory, to investigate whether the lack of power in the low-l CMB might be telling us something about the onset of inflation.

Presenter: Prof. SAGNOTTI, Augusto (SNS Pisa)

Contribution ID: **4** Type: **not specified**

Non-equilibrium Random Matrix Theory and Inflation

Tuesday, 20 September 2016 15:00 (45 minutes)

We present an analytic method for calculating the transition probability between two random Gaussian matrices with given eigenvalue spectra in the context of Dyson Brownian motion. We show that in the Coulomb gas language, in large N limit, memory of the initial state is preserved in the form of a universal linear potential acting on the eigenvalues. We compute the likelihood of any given transition as a function of time, showing that as memory of the initial state is lost, transition probabilities converge to those of the static ensemble. Then we discuss the implications of this for small-field inflation in the string theory landscape.

Presenter: Dr WESTPHAL, Alexander (DESY)

Contribution ID: **5** Type: **not specified**

String Theory, Inflation and Amplitudes

Tuesday, 20 September 2016 15:50 (45 minutes)

We will discuss inflationary models compatible with the data, based on nonlinear realization of supersymmetry, as suggested by D3 brane physics of string theory. Relation to recent progress in understanding of soft limits of amplitudes in models with nonlinear symmetry will be presented.

Presenter: Prof. KALLOSH, Renata (Stanford University)

Contribution ID: **6** Type: **not specified**

The Search for a Stochastic Background of Gravitational Waves

Tuesday, 20 September 2016 17:10 (45 minutes)

A stochastic background of gravitational waves can be described as a superposition of several uncorrelated contributions. It can be of both cosmological and astrophysical origin. In the first case, it can constitute potentially a unique probe of the primordial universe. In the second, it can give precious information on stellar populations. After discussing how this kind of signal can be detected and what information can be estracted from its study, I review the past and ongoing efforts
to find it, the current upper limits and the future perspective for its detection.

Presenter: Dr CELLA, Giancarlo (Pisa U., INFN and VIRGO)