Bollettino Settimanale

Lunedì 9 giugno 2014	Martedi' 10 giugno 2014	Mercoledi' 11 giugno 2014	Giovedi' 12 giugno 2014	Venerdì 13 giugno 2014
AULA CONVERSI ore 14.00 **SEMINARIO INFN Fisica Sperimentale delle Particelle Elementari** **Quarkonia-like exotic states in LHCb** *Antonio Augusto Alves Jr (INFN Sezione di Roma)* The quarkonia spectroscopy has recently got a renewed interest due to the discovery of several missing states and numerous unexpected quarkonium-like resonances. These studies were performed at Charm and Beauty factories, at Tevatron and more recently at the LHC experiments. While the conventional q anti-q states are well described by phenomenological potential models, many of the newly discovered quarkonium-like mesons do not seem to fit into theq anti-q onventional spectrum. There is an increasing evidence that some of these new states are "exotic", that means new forms of hadronic matter such as mesonic molecules, tetraquarks, hybrid mesons and also hadroquarkonium. In this seminar the recents results of the LHCb experiment in this field are described together with the outlook for Run II of the LHC.		**CONSIGLIO DI FACOLTA'** **AULA AMALDI ORE 14.00** **AULA CORBINO ore 15.00** **SEMINARIO DI BIOFISICA** **Bacteria in microengineered environments** *Peter Galajda (Institute of Biophysics, Biological Research Center of the Hungarian Academy of Sciences)* There is an intimate relation between a cell and its environment: environmental factors affect the functioning of cells while the organisms themselves can modify the chemical and physical properties of the extracellular space. In order to explore these processes we need the ability to manipulate cellular environments and habitats on the microscopic scale. In our research we use microfabrication technologies to create synthetic engineered microhabitats for bacteria. With the help of microfluidics we study a range of biophysical and biological p! roblems including the hydrodynamics of swimming, the synchronized motion and swarming of cell populations, bacterial chemotaxis in chemical concentration gradients and the complex interactions of physically separated but chemically coupled cell communities. Throughout these examples I will attempt to demonstrate the complex multicellular behavior of bacterial populations, and the usefulness of microfabrication technologies in modern microbiology. **SALA LAUREE ore 16.00** **SEMINARIO ICRA** **On the structure of the circumburst medium in the fireshell model of Gamma-Ray Bursts** *Damien Begue (Sapienza Università di Roma and ICRANet)* In the fireshell model, the extended afterglow of Gamma-Ray Bursts (GRBs) is emitted when a relativistically expanding shell interacts with massive structures (clouds) of the circumburst medium. The spectra are computed by assuming that the emission is thermal in the frame co-moving with the shell. The reproduction of the peak energy requires the introduction of the filling factor $\mathcal{R}$ that is interpreted as the ratio of the area emitting over the total area of the shell. It is deduced that the circumburst medium is composed! of filaments. In this paper, we consider the interaction between the shell and a filament rather than between the shell and a cloud, as done in the fireshell model. The assumption that the emission is thermal requires the optical depth τ to be larger than one. We use this additional constraint to determine a regime of deceleration compatible with the variability time scale of GRBs. We find that the observations can be reproduced when a massive cloud of 10^{-4} solar mass is placed at a radius of the order of 10^{14}cm. **SALA LAUREE ore 17.00** **SEMINARIO ICRA** **Thermal emission in early afterglow from the GRB-SNR interaction** *Gregory Vereshchagin (ICRANet - Pescara)* The interaction between a GRB ejecta and a baryonic shell is considered in the context of the binary driven hypernova model of Gamma-Ray Bursts. The kinematic and observational properties of the shell after the interaction are derived. In particular, temperature and duration of the thermal emission are obtained. The model is then applied to GRB 090618 and the observed characterstics of the thermal component are reproduced for a shell having mass of a fraction of the solar mass and thickness of about 10^9 cm.	**AULA CONVERSI ore 16.00** **SEMINARIO INFN Fisica Sperimentale delle Particelle Elementari** **BICEP, B-mode polarization of the CMB and gravity waves from primordial inflation.** *Antonio Riotto (University of Geneva)* We will discuss the implications of the recent detection of B-mode polarization of the CMB by the BICEP collaboration if it is ascribable to the gravity waves generated during primordial inflation.	