

Bollettino Settimanale

Lunedì 20 novembre 2017	Martedì 21 novembre 2017	Mercoledì 22 novembre 2017	Giovedì 23 novembre 2017	Venerdì 24 novembre 2017
<p>AULA CONVERSI ore 14.00 SEMINARIO INFN DI FISICA SPERIMENTALE DELLE PARTICELLE ELEMENTARI</p> <p>How dark is Dark: the Dark Matter quest at ATLAS</p> <p><i>Valerio Ippolito (INFN Sezione di Roma)</i></p> <p>What is Dark Matter composed of? Does it interact non-gravitationally with ordinary particles - and if it does, how and to what extent can high-energy physics shed light on its particle nature? We will discuss how the physics programme of the ATLAS experiment at the LHC may answer these questions in the post-Higgs-boson-discovery era.</p> <p>AULA CONVERSI ore 16.00 SEMINARIO TEORICO INFN</p> <p>Analytic Calculation of Feynman Diagrams by means of Differential Equations</p> <p><i>Roberto Bonciani ("Sapienza Univ. di Roma)</i></p> <p>I will review the method of differential equations for the analytic calculation of multi-loop Feynman diagrams. I will illustrate applications to processes important for the physics at the LHC as the production of top pairs and Higgs plus jet.</p>		<p>AULA 6 ore 15.00 SEMINARIO DI OTTICA</p> <p>The connection between rays and waves</p> <p><i>Miguel Alonso (University Rochester)</i></p> <p>While the ray model is outdated as a physical theory, it is still an extremely valuable conceptual and computational tool for the design and modeling of optical systems. It is therefore important to know the limits of its validity as well as its connection to the more physical wave framework. Its importance is partly due to the fact that it corresponds to a limiting case of the wave theory in several situations, including those of short wavelength (in many different ways) and statistical incoherence. Accurate wave field estimations can result from the ray model if a suitable framework is employed. In this talk, an overview is given of the many ways in which the ray and wave models can be related...</p>	<p>AULA CONVERSI ore 10.00 WORKSHOP: Stato e Prospettive della Fisica delle Astroparticelle</p> <p>L'evento é rivolto a ricercatori e studenti e ha l'obiettivo di presentare una panoramica dell'area di ricerca in fisica delle astroparticelle, che studia l'Universo combinando le informazioni ottenute con diversi "messaggeri" quali raggi cosmici, neutrini, raggi gamma e onde gravitazionali.</p> <p>CONSIGLIO DI DIPARTIMENTO AULA AMALDI ORE 14.30</p>	<p>AULA CONVERSI ore 16.00 SEMINARIO TEORICO INFN</p> <p>Transient spiral arms and galaxy rotation curves</p> <p><i>Francesco Sylos Labini ("Sapienza Univ. di Roma)</i></p> <p>We describe how a simple class of out of equilibrium mass distributions evolve under their self-gravity to produce a quasi-planar spiral structure surrounding a virialized core, qualitatively resembling a spiral galaxy. The spiral structure is transient, but can survive tens of dynamical times, and further reproduces qualitatively noted features of spiral galaxies as the predominance of trailing two-armed spirals and large pitch angles. The mechanism leads generically to a characteristic transition from predominantly rotational motion, in a region outside the core, to radial ballistic motion in the outermost parts...</p>

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Lunedì 27 novembre 2017	Martedì 28 novembre 2017	Mercoledì 29 novembre 2017	Giovedì 30 novembre 2017	Venerdì 1 dicembre 2017
<p>AULA CONVERSI ORE 14.00 SEMINARIO INFN-Fisica sperimentale particelle elementari</p> <p>Discovery Physics at the Energy Frontier - Where we stand and where we're headed with LHC Run II and beyond <i>Francesco Pandolfi (INFN)</i></p> <p>We will discuss searches for Supersymmetry and for more exotic models, performed at CMS. And as the 'high-luminosity' phase of the LHC approaches, we will show how the key to new physics might lie in the Higgs boson.</p> <p>AULA RASETTI ORE 15.00 SEMINARIO DI ASTROFISICA</p> <p>Could GRB170817A be really correlated to a NS-NS merging? <i>Daniele Fargion</i> <i>(Physics Department & INFN Rome1)</i></p> <p>The GW 170817 and GRB170817A occurred within a short time almost in the same sky windows. It has been the nearest Short GRB observed, the first NS NS collapse merging, the softer SGRB, the weakest one and the first GRB GW correlated event within just a year or even a month of detection. An amazing lucky event hard to be accepted at first view. Moreover the huge spread (8 order of magnitude) in apparent luminosity among thousands GRB call for a thin blazing jet source able to embrace (with the same NS-NS or NS-BH collapse) the vast variability observed by its geometry (in axis, off axis) view. May the case of GRB170817 be associated to such an extreme off axis detection? Many authors and us agree on this possibility. However there maybe an additional unexpected novel geometry in GRB explosion making the GRB observation at near distance much more probable: a twin gamma disk-cone blazing in wide solid angles in addition to the inner thin precessing jets event.</p>	<p>AULA CONVERSI ore 16.00 SEMINARIO GENERALE</p> <p>Superconductivity on a Disordered Landscape <i>Pratap Raychaudhuri (Tata Institute of Fundamental Research, Mumbai, India)</i></p> <p>The discovery of high temperature superconducting cuprates and the unusual properties associated with these materials posed the first serious challenge to our conventional understanding of superconductivity based on Bardeen-Cooper-Schrieffer theory. The most striking feature in these materials was the observation of a "pseudogap state" where a gap in the electronic density of states was seen to persist up to temperatures well above the temperature where superconductivity was destroyed. The low carrier density in these materials and the proximity to antiferromagnetic Mott insulating state was largely thought to be responsible for these unusual properties. Now, experiments performed over the last one decade on a variety of disordered conventional superconductors suggest that the origin unusual properties may be much more general than originally conjectured. In this talk, I will give an overview of experimental investigations on strongly disordered s-wave superconductors which reveal several properties initially thought to be specific to cuprates. I will show how the phase degree of freedom, normally considered irrelevant in clean bulk superconductors, start playing a crucial role in determining the properties of the superconducting state as the superfluid density is reduced in the presence of disorder, giving rise to unusual properties both in the superconducting state and in the normal state above the superconducting transition temperature.</p>	<p>AULA RASETTI ORE 14.00 SEMINARIO INFN-Fisica sperimentale particelle elementari</p> <p>Multi-messenger Signal from Supernovae Explosion <i>Marek J. Szczepanczyk</i> <i>(Embry-Riddle Aeronautical University)</i></p> <p>Core-Collapse Supernovae (CCSNe) are the spectacular and violent deaths of massive stars. The study of Gravitational Waves (GW) from CCSNe can help elucidate the explosion mechanism and give us information about the physical properties of the collapsed core like Equation of State, neutrino mass hierarchy or unknown physics. In this talk I will review the state-of-art techniques used to search for GW from CCSNe and current work on detection perspectives with future GW Observatories. Their detection requires a deep understanding of multi-dimensional CCSN simulations, data analysis caveats, detector response, as well as the insights provided by neutrino and electromagnetic messengers. I will talk about properties of the CCSN waveforms, algorithm development that uses the deterministic features (like g-modes) used to increase the visible distance for CCSN detection. I will also review the detection range, future algorithm developments and detection capabilities with the designs of future detector configurations.</p>		