Seminari di Fisica 2014 dell'Universita' di Ferrara e dell'INFN

Report of Contributions

https://agenda.infn.it/e/7279

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

Using massive clusters to probe the cosmological paradigm and unveil the first light in the Universe

Wednesday, 8 January 2014 15:30 (1 hour)

abstract: Galaxy clusters are a powerful tools to test the Lambda-Cold-Dark-Matter (LCDM) cosmological paradigm and the structure formation scenario. Their multi-wavelength study reveal key information on the dark sector of the Universe (DM and dark energy), as well as on the cosmic circulation of baryons in the cold and hot phase. I will briefly review the methodologies and recent results in this field. I will then describe an on-going project (called CLASH), which combines an Hubble treasury program with a large spectroscopic survey with the VLT to study the mass distribution (dark matter and baryons) of 25 clusters at intermediate redshift with unprecedented accuracy, using gravitational lensing and kinematics techniques. I will describe the potential of these observations to shed light on the nature of the DM. These massive clusters also act as powerful gravitational telescopes, magnifying the most distant galaxies which would otherwise escape detection, thus allowing us to search for the first stars well into the first billion year of cosmic history.

Presenter: Prof. ROSATI, Piero (Universita' di Ferrara)

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

Chi sta giocando a dadi col mondo?

Thursday, 9 January 2014 14:30 (1 hour)

Abstract: Einstein, come tutti i fisici prima di lui, era convinto che l'obiettivo della scienza fosse la descrizione di un mondo determinato, definito, indipendente dalla nostra conoscenza. Quando i fisici di Copenaghen cominciarono a parlare di indeterminismo e problema della misura, fu chiaro che la MQ - così com'era - non era compatibile con quella descrizione: si produsse uno iato tra chi, per salvare la nuova teoria dei quanti, era disposto a cambiare la propria idea di "mondo" e chi, al contrario, era convinto si dovesse cercare una teoria migliore, capace di descrivere in maniera classica la realtà. Punto affatto singolare in cui fisica e filosofia possono intrecciarsi proficuamente, dando vita alle diverse contemporanee interpretazioni. Ma com'è possibile che esistano più interpretazioni di una stessa teoria? E a che cosa servono? Da quali presupposti concettuali partono e a quale realtà si riferiscono? Ed è vero quanto riferisce Rebecca Goldstein in Properties of Light, che "in altri contesti, quelli non scientifici, la differenza tra chi è convinto dell'esistenza di una realtà indipendente e chi no è grosso modo correlata alla distinzione tra chi è sano di mente e chi dà i numeri"? E perchè Einstein, Bohr, lo stesso Mermin (padre della famosa sentenza "Shut up and calculate" - persino lui), dovettero uscire dai confini della fisica e
improvvisarsi filosofi per affrontare appieno la questione?

Presenter: Dr ROSELLI, Andrea (Universita' di Milano)

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

Search for Electric Dipole Moments with Polarized Beams in Storage Rings.

Thursday, 20 February 2014 14:30 (1 hour)

An electric dipole aligned along the spin axis of a fundamental particle, nucleus, or atomic system violates both parity conservation and time reversal invariance. The observation of such a phenomenon would, at present or proposed levels of experimental sensitivity, signal new physics beyond the Standard Model.

The usual method for identifying an electric dipole moment (EDM) in such searches is to observe the rotation of the spin axis or polarization under the influence of a strong electric field. The use of a storage ring opens the search to charged, polarized particles such as the proton, deuteron, 3He, etc. that would otherwise not be manageable in such a field.

The best procedure begins with the alignment of the beam polarization along the velocity of the beam followed by the observation of any slow rotation of that polarization into the vertical direction perpendicular to the ring. This imposes several feasiblity requiremens. As an example, the ring must utilize a special combination of higher order fields to ensure that the usually unstable polarization along the direction of the velocity remains for times up to 1000 s to allow any EDM effect to accumulate to a measurable level.

At present, dedicated studies are being performed at COSY to examine the use of higher-order (sextupole) fields in the storage ring to lengthen the coherence time of the stored, horizontal beam polarization.

The presentation will provide a general introduction to the EDM search by means of polarized beams in storage rings and will highlight the developments in the polarimeter system accomplished at the COSY ring at FZ-Juelich.

Presenter: Prof. LENISA, Paolo (Universita' di Ferrara)

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

Measuring matter perturbations with weak lensing of supernovae

Monday, 20 January 2014 14:00 (1 hour)

Abstract: Soon the number of type Ia supernovae (SNe) measurements should surpass 10^5. Understanding weak lensing effects in these objects will then be more important than ever. Although SNe lensing is usually seen as a source of systematic noise in this talk I will show how this noise can be in fact turned into signal. I will thus first describe how we were able to accurately model the lensing effects. I will then use these fits to show that the SNe Hubble diagram dispersion is basically modulated by Omega_m0 and sigma_8. I will argue that the modelling of this dispersion allows for an independent measurement also of sigma_8 with supernova data. I will finally show some results using real data.

Presenter: Dr QUARTIN, Miguel (Univ. Federal do Rio de Janeiro (UFRJ), Brasil)

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

Shock Breakout and Cooling Envelopes - From Supernovae to Low Luminosity GRBs

Monday, 27 January 2014 15:00 (1 hour)

Abstract
We discuss the physics of the breakout of relativistic and non relativistic shocks from the envelopes of stars. While most of the luminosity escapes from the diffusion/convection transition, the thermalization of the photons happens farther out.
Special treatment of these different regimes is important in order to capture correctly both luminosity and color temperature of the observed radiation. At late times, recombination plays an important role in setting the temperature, and only at later times it could affect the luminosity as well.
For compact enough stars, relativistic breakout will occur. We discuss the evidence in favor and against the association of such event with low luminosity GRBs.

Presenter: Prof. SARI, Re'em (Racah Institute of Physics, Hebrew University, Jerusalem)

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

GRBs and Core Collapse Supernovae: Prospects for LIGO-Virgo/KAGRA searches for long gravitational wave bursts

Wednesday, 29 January 2014 15:00 (1 hour)

Abstract: Electromagnetic priors can greatly aid searches for gravitational waves with the advanced detectors LIGO-Virgo and KAGRA. Of particular interest are GRBs and core-collapse SNe. We discuss some recent phenomenology that points to inner engines comprising black holes rather than (proto-)neutron stars. It points to a new class of long duration gravitational wave bursts from turbulent matter around rotating black holes of interest to searches in the Local Universe within ~35 Mpc.

Presenter: Prof. VAN PUTTEN, Maurice (Università di Seul (Sud Korea))

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

A Balloon Borne Spectrometer for Measuring Positron/Electron Spectra at the TeV Scale

Thursday, 13 February 2014 11:00 (1 hour)

A future balloon borne spectrometer will be described. The goal of the experiment is to measure the cosmic ray positron and electron flux up to the TeV scale. In the quest for dark matter, the positron fraction in cosmic rays is a key observable as it might indicate the presence of decaying dark matter particles. A balloon spectrometer offers a cost effective method to measure the spectrum with high precision using a simple tracker, magnet, ToF and calorimeter configuration. The electromagnetic calorimeter is a critical component for any balloon based cosmic ray spectrometer for both energy resolution and also background rejection. The development, fabrication and testing of a novel sampling calorimeter will be presented. The design is a lead-scintillator sandwich with wavelength-shifting fibres embedded into segmented scintillator plates. Fibres are read-out with different Silicon-PMTs on each end - Hamamatsu MPPCs and Zecotek MAPDs. The Zecotek device benefits from 15000 pixels/mm2 giving a higher saturation tolerance, but also reduced gain. By utilising both types of Si-PMTs the dynamic range of the calorimeter can be complete from MIPs up to the TeV energy scale for positrons. The design concept offers an energy resolution of 15%/sqrt(E) and proton rejection up to 104. A 16 layer 400mm x 400mm prototype calorimeter has been constructed. Extensive testbeams were carried out at CERN during summer 2012 covering the energy range 0.5 - 180 GeV both proton and electron incident particles. First results in terms of energy resolution, uniformity and potential proton rejection/electron identification efficiency will be presented. Potential physics reach of a balloon spectrometer beyond PAMELA, FERMI-LAT and AMS-02 will also be discussed.

Presenter: Prof. HOWARD, Alex (ETH Zurich)

Contribution ID: **7** Type: **not specified**

Antineutrinos from the Earth and from reactors

Monday, 10 March 2014 15:30 (1 hour)

Low-energy neutrinos have very long mean free path and neutrinos emitted by astronomical bodies carry direct information on their internal composition and structure. Experimental detection of the solar neutrinos has already provided valuable information on radioactive processes inside the stars. Unlike the Sun, Earth emits mainly antineutrinos (called geoneutrinos) which are detected by inverse beta reaction, together with antineutrinos from nuclear reactors. The only two unsegmented liquid scintillation detectors which have measured both terrestrial and reactor antineutrinos are presently KamLAND (Japan) and Borexino (Italy). The two collaborations published new data almost simultaneously in March 2013. The seminar focuses on interpretation of observed antineutrinos signals in the frame of Terrestrial current models and of reactor antineutrino physics. New under construction or planned experiments will be also illustrated.

Presenter: Prof. MANTOVANI, Fabio (Universita' di Ferrara)

Contribution ID: **8** Type: **not specified**

Study of Silicon Silicon Strip Detectors for a Future MeV Telescope

Monday, 17 February 2014 15:00 (1 hour)

Abstract: Single sided silicon strip detectors (SSD) and double sided silicon strip detectors (DSSD) are silicon based micro-strip detectors that are widely used in various physics experiments and medical applications.

These detectors are currently commercially available with thicknesses and pitch sizes up to 2000 μm each, however most of the ones being used in experiments are rather thin detectors (less than 1000 μm in thickness and pitch size). Currently we are testing thick detectors for their potential to be used to create a future Compton telescope which will operate in the MeV region.

This telescope would require DSSDs thicker than what is widely used.
Using Silvaco's TCAD software package, a model was developed to simulate the properties and performance of these detectors in terms of depletion voltage, capacitance, leakage current, charge collection efficiency and charge sharing. The model was bench-marked by comparing its simulation output with measurements made on several detectors, and then the simulation was extended to thicker detectors where only a few experimental data exists.

Presenter: Prof. KALIL, Mohamad (AstroParticle and Cosmology Laboratory (APC) in Paris)

Contribution ID: **9** Type: **not specified**

Cilindri superconduttivi in MgB2 per schermi magnetici

Thursday, 27 February 2014 15:00 (1 hour)

Abstract

La possibilità di produrre cilindri superconduttivi di MgB2 di dimensioni delle decine di centimetri, applicando la tecnologia dell'infiltrazione reattiva, apre le porte all'utilizzo di schermi magnetici passivi in grado di operare fino a temperature di circa 30K. Vengono presentate le linee principali alla base dell'originale processo di infiltrazione reattiva per ottenere MgB2, i tipi di manufatti superconduttori ottenuti in questi anni e le loro caratterizzazioni superconduttive in termini di densità di corrente critica in funzione della temperatura e del campo magnetico. Lo schermo magnetico passivo rappresenta, tra le potenziali applicazioni dei materiali superconduttori, quella più semplice, non avendo bisogno di introdurre correnti dall'esterno. Nonostante ciò la bassa capacità termica intrinseca dei superconduttori impone attenzioni per evitare i flux jumps a bassa temperatura, una problematica che ha reso critico da decenni l'uso dei superconduttori a bassa temperatura (Nb,Pb) per questo scopo. Verranno discusse le misure di schermo magnetico finora ottenute con MgB2 e verranno proposte linee di sviluppo della ricerca in questo settore.

Presenter: Dr GIUNCHI, Giovanni (Consulente Scienza dei Materiali)

Contribution ID: **10** Type: **not specified**

The physics of the fragmentation of finite systems

Friday, 21 February 2014 10:15 (1 hour)

Many physical systems evolve by brutal fragmentation or, on the contrary, by aggregation and coalescence. Unlike the processes of reactions at equilibrium (chemical reactions, nuclear fission, for example) that are well understood, the processes of fragmentation are often puzzling. In the nineties, great efforts have been invested in the frame of nuclear physics to describe and understand the process of nuclear multifragmentation. The statistical tools developed at this time are now spreading to many different domains including biology, geology, chemistry, matter physics etc.
The physical information on such fragmenting systems can be inferred from the probabilities of their partitions (that is the set of thesizes of all the fragments). These probabilities are also conditioned by the constraints of finite size or conservation and combinatorialconstraints related for example to the indistinguishablity of their constituents or the density of states of the fragments. We presentstatistical methods that discriminate physical correlations, carrying information on the system, from trivial correlations due to thecombinatorial constraints or conservation laws. This work has led us to solve exactly the model of Random Graphs. We show examples of applicative works, done in collaboration with different laboratories of the Paris-Sud Faculty of Sciences, that have led to the identification of physical effects from systems consisting of sets of nucleons (nuclear spinodale decomposition) of atoms (cluster fragmentation), of molecules (thermal clusters of H2O) and from the topology of insect nests (cubitermes).

NB:Anche se il titolo inquadra un agomento molto specifico , il seminario servira'ad introdurre alcune delle le attivita'che vengono svolte a Orsay nella Facolta'di Scienze. E'quindi destinato non solo ai colleghi ma anche agli studenti (almeno quelli della Laurea Magistrale e del Dottorato) al fine di offrire opportunita'per nuove collaborazioni scientifiche e Tesi di Laurea Specialistiche e di Dottorato.

Seguira'alle ore 11.15-11.30 un rinfresco che sara'organizzato nella cucina del IV piano.

Presenter: Prof. DESESQUELLES, Pierre (Universita'di Paris Sud (Orsay))

Contribution ID: **11** Type: **not specified**

X-ray view of Cataclysmic Variables

Tuesday, 11 March 2014 11:00 (1 hour)

Abstract: The X-ray surveys conducted by Swift and Integral have revealed a non-neglible number of Cataclysmic Variables (CV) emitting above 20keV.
I will present recent results from the ongoing programme with XMM-Newton on newly discovered sources aiming at identifying their true nature.
I will show their temporal and spectral properties with emphasis on new aspects of the X-ray emission of CV systems.

Presenter: Dr DE MARTINO, Domitilla (Osservatorio Astronomico Capodimonte dell'INAF di Napoli)

Contribution ID: **12** Type: **not specified**

Caratteristiche ed obiettivi dell'esperimento di oscillazione di neutrino JUNO (Jiangmen Underground Neutrino Observatory)

Thursday, 13 March 2014 15:00 (1 hour)

L'elevato, ed in qualche modo inatteso, valore dell'angolo di mixing θ13 misurato recentemente da Day Bay, Reno e Double Chooz
rende sperimentalmente accessibile il metodo proposto più di dieci anni fa da Petcov e Piai per la determinazione
della gerarchia di massa dei neutrini tramite la misura dello spettro di antineutrini con un rivelatore a scintillatore liquido di grande massa situato a media distanza (qualche decina di km) da un reattore nucleare di alta potenza.
E'in questo contesto che nasce la proposta per l'esperimento JUNO da realizzare in Cina, a 50 km di distanza da un duplice complesso nucleare in fase di costruzione.
In questo seminario, dopo avere descritto le potenzialità di fisica dell'esperimento, che includono, ma non si esauriscono nella fondamentale misura
della gerarchia di massa, delineerò le caratteristiche tecniche dell'apparato, con particolare enfasi alle sfide tecnologiche da affrontare e risolvere
per rendere effettivamente fattibile la determinazione della gerarchia.

Presenter: Dr RANUCCI, Gioacchino (INFN, Milano)

Contribution ID: **13** Type: **not specified**

A cosmological bound on e^+e^- mass difference

Thursday, 6 March 2014 15:00 (1 hour)

We demonstrate that CPT-violation due to the e^+e^- mass difference generates a photon mass.
As a result a cosmological bound on the photon mass leads to the bound on e^+e^- mass difference that more than 10 orders of magnitude stronger than the direct experimental bound.

Presenter: NOVIKOV, Victor, A. (ITEP, Moscow)

Contribution ID: **14** Type: **not specified**

Gamma-Ray Bursts as the missing link in stellar evolution RIMANDATO a nuova data

Thursday, 20 March 2014 15:00 (1 hour)

The first stars of the Universe, called Population III stars (Pop III), are rapidly becoming an important subject of investigation from the point of view of theory and observations. The formation of these stars hundreds of millions years after the Big-Bang marks the end of what it is called the "Dark Age"". Today's telescopes cannot look far enough into the cosmic past, so we don't have direct observations on how the primordial stars were formed. This new window is of paramount importance to astrophysics and cosmology. Population III stars are formed with primordial nucleosynthesis elements, they are responsible for the formation of the first metals in the Universe. Change of chemical composition also affects the Initial Mass Function of stars. The energy scattered in newborn Universe will drastically influence its history. Certainly, the new generation of instruments will give us an opportunity to test theoretical ideas about formation of the first stars. Among these first generation stars an important role were played buy massive stars. The Jean Mass favors creation of very massive objects during star formation by condensation of nuclear cloud. Numerical simulations predict that Pop III stars could have masses as high as few hundreds solar masses. As these stars evolve, physical conditions in the center lead to the development of specific type of hydrostatic instability through electron-positron pairs creation (pair-instability).
In this presentation, I will re-analyse Pair Instability (PI) SN explosion. I will present results of one-dimensional simulations and analysis of the fate of a star depending on physical conditions. I will also present 2D simulations of PISN explosion based on idea of non-uniform explosion and compare the results with the case of uniform explosion in stellar core. I will explore a new scenario of Gamma-Ray Bursts related to the PISNe and present some interesting consequences.

Presenter: Prof. CHARDONNET, Pascal (Université de Savoie, Annecy (Francia))

Contribution ID: **15** Type: **not specified**

The dark-matter halos of massive lens galaxies and clusters of galaxies

Monday, 24 March 2014 15:00 (1 hour)

The physics of gravitational light deflection, or gravitational lensing, offers a great variety of applications in several fields of astrophysics. In particular, in the strong lensing regime, the observations of multiple images of background sources created by intervening mass concentrations provide the opportunity of measuring very precisely the total mass of the lenses. The combination of strong gravitational lensing and stellar population models has turned out to be an invaluable tool to disentangle the luminous and dark-matter components in the inner regions of distant galaxies and clusters of galaxies. I will show how, by using this technique on unprecedented data obtained with the Hubble Space Telescope and Very Large Telescope, we have been able to investigate the properties of the dark-matter halos of massive lens early-type galaxies and galaxy clusters in the CASSOWARY and CLASH surveys.

Presenter: GRILLO, Claudio

Contribution ID: **16** Type: **not specified**

The quantum clock: a critical discussion on (space-)time

Tuesday, 25 March 2014 11:00 (1 hour)

I critically discuss the measure of very short time intervals.
By means of a conceptual experiment, I describe an ideal clock
based on the occurrence of completely random events.
I show that the minimum time interval dt that this clock can measure
scales as the inverse of its size dr.
This implies an uncertainty relation between space and time: dr dt >= Gh/(2pi c^4)
where G, h, and c are the gravitational constant, the Planck constant,
and the speed of light, respectively.
I outline and briefly discuss the implications of this uncertainty principle.
Finally I will discuss an experiment based on a balloon-borne
very large area detector capable to investigate (sub)millisecond
structures in the prompt emission of Gamma Ray Bursts.
Energy-dependent time lags in these phenomena could probe
the granular structure of the space-time fabric down to the Planck scale.

Primary author: Prof. BURDERI, Luciano (Universita' di Cagliari)

Presenter: Prof. BURDERI, Luciano (Universita' di Cagliari)

Contribution ID: **17** Type: **not specified**

Datazione di dipinti del Novecento con radiocarbonio

Thursday, 20 March 2014 17:00 (1 hour)

Presenter: Prof. PETRUCCI, Ferruccio (Universita' di Ferrara & INFN)

Contribution ID: **18** Type: **not specified**

Datazione di dipinti del Novecento con radiocarbonio

Presenter: Prof. PETRUCCI, Ferruccio (Universita' di Ferrara & INFN)

Contribution ID: **19** Type: **not specified**

FARICH development for Super Charm Tau factory

Wednesday, 19 March 2014 15:00 (1 hour)

The Super Charm-Tau Factory is under the development at the Budker INP in Novosibirsk. This will be the e+e collider with the luminosity up to 10^35 cm^-2s^-1 and the energy at the centre of mass from 2 to 5 GeV. The 'golden'process will be the search for the lepton flavor violation in tau decays: tau -> mu+gamma with the projected sensitivity Br<10^-9. One of the main background sources for this process is the decay tau -> pi+pi0+/nu (Br=25%). To suppress such a background a very powerful muon/pion separation is needed below 1 GeV/c. This task is accessible only with a FARICH.
In 2012 FARICH prototype based on a photon camera with dimensions of 200x200 mm from Philips Digital Photon Counting (PDPC) has been tested at CERN. A remarkable particle separation was achieved with a 4-layer aerogel sample: pi/K separation at 6 GeV/c momentum is 3.5 sigma, mu/pi separation is 5.3 sigma at 1 GeV/c. The analysis of the data has shown that the main contribution to the accuracy of ring radius measurement is coming from aerogel. The development of focusing aerogels is proceeding in two main directions: tuning of production technology of multilayer blocks and development of a new production method with continuous density (refractive index) gradient along block's depth.
Part of the talk is devoted to the history of the development of aerogel Cherenkov counters of different types and aerogel production in Budker Institute of Nuclear physics and Boreskov Institute of Nuclear Physics.

Presenter: EVGENIY KRAVCHENKO BUDKER (INP Novosibirsk (Russia))

Contribution ID: **20** Type: **not specified**

recent discovery of inflationary gravitational waves by BICEP2

Wednesday, 26 March 2014 16:00 (1 hour)

I will discuss the recent BICEP2 paper where it is claimed a detection of inflationary gravitational waves in the CMB polarization pattern

Presenter: NATOLI, Paolo (Universita' di Ferrara)

Contribution ID: **21** Type: **not specified**

Review of the earliest Russian X-ray and optical observations of GRBs

Tuesday, 1 April 2014 11:00 (1 hour)

Abstract: A review of the earliest observations of GRBs in Russia is discussed, starting from the earliest observations in hard X-rays onboard of the Russian satellites “Prognoz”and the interplanetary stations launched to Mars and Venus.

Presenter: Prof. KURT, Vladimir G. (AstroSpace Center, P.N. Lebedev Physical Institute of Russian Academy of Sciences)

Contribution ID: **22** Type: **not specified**

CMB spectral distortions during the recombination of primal plasma in the early Universe

Friday, 4 April 2014 11:00 (1 hour)

The physical processes during the cosmological recombination epoch (900 < z < 7000) are well known now.
The most important effect to be observed in future is unique deviations of the CMB spectrum from a blackbody
caused by the photon release during the recombination.
These photons are added to the thermal CMB spectrum forming the hydrogen and helium recombination spectrum.
The dynamics of the hydrogen recombination process is controlled by two-photon transitions 2s-1s and Ly-alpha
photon escape during the multiple scattering in expanding medium.
The contribution of two-photon transitions is about 57%, and this process is principal for the whole dynamics.
The fraction of recombination photons is about 10^-8 - 10^-9 of the total energy density of the CMB spectrum,
so the spectral distortion is expected to be very small.
This contribution can increase to about 10^-7 - 10^-6 at 300 MHz, and it is the most convenient range to detect it.
Since the CMB spectrum does not depend on direction, we can choose any sky point with less contribution
of different background component (near the Galactic pole, for example).
We can also use the non-polarization properties of the recombination spectrum for the detection.

Presenter: Prof. KURT, Vladimir G. (AstroSpace Center of the P.N.Lebedev Physical Institute, Russian Academy of Sciences of Moscow)

Contribution ID: **23** Type: **not specified**

Insoluble proteins: molecular assassins of neuronal cells

Tuesday, 15 April 2014 15:00 (40 minutes)

How long can a man live?
While constantly trying to increase the average lifespan, human attempts have always come to face newer natural obstacles, represented by the spreading of more complex and yet incurable types of diseases. In developed countries, one of the main obstacles now is represented by neurodegenerative disorders, such as Alzheimer's Disease and Parkinson's Disease.
Interestingly, despite being very diverse in symptoms and characteristics, neurodegenerative disorders have been discovered to share a common feature at the molecular level. In fact, such diseases are all particular instances of a general process that drives proteins in a cell out of their normal, soluble condition. As a result, various non-functional, toxic structures called aggregates are formed, and presence of these insoluble proteins eventually leads to cell death.
In this talk, I will give some hints on the biophysics of protein aggregation, its connection with neurodegenerative diseases, and the controversy over protein solubility. Finally, I will present a computational tool that we have developed, based on a new Neural Network algorithm, to predict protein solubility from its building constituents. This tool could provide vital insights into protein aggregation and misfolding related diseases.

Presenter: VECCHI, Giulia (University of Cambridge)

Contribution ID: **24** Type: **not specified**

The Curious Case of Intrinsically Disordered Proteins

Tuesday, 15 April 2014 15:40 (40 minutes)

Proteins are macromolecules that carry out most of the functions in a living cell. These functions are largely attributed to the structure they adopt natively in the cell. Intrinsically Disordered Proteins (IDPs), a unique and important extension of the protein kingdom, challenge the well-established concept of "one protein–one structure–one function"in structural biology. IDPs are highly dynamic proteins that adopt an ensemble of conformations. Found abundantly in nature, some of them perform very important biological functions, and have been implicated in a wide variety of diseases such as cancer, cardiovascular disease and neurodegenerative diseases.
In the absence of a well-defined structure, then, how do IDPs manage to play their biological role? And how do we explain the "one protein–many structures–one to many functions"concept they exhibit? Given their significance in disease, can these ensembles of structures be subjected to rational drug design?
In my talk, I will uncover these questions while highlighting the peculiar biophysical characteristics of IDPs, and the techniques used to study them. I will also elaborate on my research on the druggability of IDPs, in which I use a computational drug-design method that we have developed, coupled with the experimental measurements from Small-Angle X-Ray Scattering, to study the interactions of small drug-like molecules with IDPs.

Presenter: JOSHI, Priyanka (University of Cambridge)

Contribution ID: **25** Type: **not specified**

PRIN Meeting on Gamma Ray Bursts

Thursday, 10 April 2014 11:00 (8 hours)

Presenter: Prof. FRONTERA, Filippo chair (Universita' di Ferrara)

Contribution ID: **26** Type: **not specified**

PRIN Meeting on Gamma Ray Bursts

Friday, 11 April 2014 09:00 (8h 30m)

Presenter: Prof. FRONTERA, Filippo (Universita' di Ferrara)

Contribution ID: **27** Type: **not specified**

A quantitative evaluation of extracranial venous flow as a biomarker of neurodegenerative disease

Thursday, 8 May 2014 11:30 (40 minutes)

MRI is a reliable method for quantifying blood flow and visualizing head and neck vasculature in 3D. Using high resolution 3D vascular imaging and 2D cardiac gated flow quantification, we will show that multiple sclerosis patients reveal anomalous venous behavior compared to healthy controls (HC). Our goal is to determine the optimum flow thresholds to differentiate normal flow from abnormal flow. A further computation fluid dynamic approach will be taken by Prof. Eleuterio Toro. More specifically, a group of 138 MS and 67 HC subjects were imaged on 3T Siemens scanners between two sites. Both 2D time-of-fligit MRV and 3D time resolved contrast enhanced MRAV were used to determine if internal jugular vein (IJV) stenosis was present, subdividing the MS patients into stenotic (ST) and non-stenotic (NST) groups. The 2D PC was used to quantify flow through the major arteries and IJVs at both C2 and C6 levels. The ratio between the larger IJV flow (dJ) versus the smaller IJV flow (sdJ) was calculated as sdJ/dJ. IJV flow was then normalized to the total arterial flow (tA), providing two major criteria for both levels, the tIJV/tA, where tIJV is the sum of both IJV flows, and sdJ/tA. Using a normalized flow cut-off of roughly 0.64, the subjects that fall below this threshold at both C2 and C6 for the tIJV/tA criteria are: 9% of HC, 11% of NST, and 61% of ST. In conclusion, the current sample of MS patients and HC indicates that there is a statistically significant difference in venous outflow through the IJV between the two groups and that a quantitative flow measure may prove to be a means to assess risk of developing MS.

Presenter: E. MARK HAACKE, PH.D. (Dept. of Radiology, School of Medicine MR Research Facility at Harper University Hospital)

Contribution ID: **28** Type: **not specified**

Impact of CCSVI-like venous anomalies on cerebral haemodynamics:a mathematical study

Thursday, 8 May 2014 12:10 (40 minutes)

By means of a recently constructed global mathematical model for the entire human circulation we study the intra-cranial haemodynamical impact of extra-cranial CCSVI-like venous anomalies. Pressure and velocity fields in the full cardiovascular system are computed. Computational results are compared to MRI measurements. Our model predicts that extra-cranial venous strictures cause disturbed flow and increased pressure in the cerebral venous system. The predicted pressure increase of about 10% in patients in supine position is chronic but its clinical implications are unclear. Work in progress on a mathematical model for transport of macromolecules across vessel walls and the computational study of the haemodynamical impact of anomalous IJV valves will also be discussed.

Presenter: Prof. TORO, Eleuterio (Universita' di Trento)

Contribution ID: **29** Type: **not specified**

discussione

Thursday, 8 May 2014 12:50 (20 minutes)

Contribution ID: **30** Type: **not specified**

Geant4 –Current and Future

Friday, 9 May 2014 15:00 (1 hour)

Geant4 is a general purpose Monte Carlo simulation tool for elementary particles passing through and interacting with matter. It finds quite a wide variety of user domains including high energy and nuclear physics, space engineering, medical applications, material science, radiation protection and security. Geant4 covers all relevant physics processes, electromagnetic, hadronic, decay, optical, for long and short lived particles, for energy range spanning from tens of eV to TeV scale. Geant4 geometry package allows the navigation of particles in most complex and realistic geometries. Geant4 has twenty years of history but it is still evolving in both physics coverage and computing architecture. In this talk, the current status and typical use-cases of Geant4 as well as the plans for the coming years will be introduced.

Presenter: Dr ASAI, M. (SLAC)

Contribution ID: **31** Type: **not specified**

Geant4: an introduction to the application development

Friday, 9 May 2014 11:00 (1 hour)

Geant4 is a software toolkit for the simulation of the interaction of particles with matter, developed by an international collaboration of physicists, engineers and computer scientists. Its application areas include high energy physics experiments, nuclear physics, astrophysics and astroparticle physics, space science, medical physics and medical imaging, radiation protection, and education. Geant4 encompasses a wide set of tools for all the domains of detector simulation and an abundant set of Physics Processes handle the diverse interactions of particles with matter across a wide energy range, as required by Geant4 multi-disciplinary nature. This seminar provides an overview of Geant4 capabilities and illustrates the major features available in the toolkit to simulate an experimental scenario. Special emphasis is placed in presenting a methodological approach to developing and validating Geant4-based simulations for experimental applications.

Presenter: Dr DOTTI, A (SLAC)

Contribution ID: **32** Type: **not specified**

Eruptions, disruptions and (repeated) explosions: massive stars at the end of their life

Thursday, 29 May 2014 16:00 (1 hour)

ABSTRACT: Observations are drawing a complex picture of the latest stages of massive stars evolution and their explosions. In this talk I concentrate on two among the least understood aspects, adopting an observational perspective: (i) How do massive stars lose a significant fraction of their mass in the years preceding the explosion? (ii) What is the role of central-engines in explosions originating from progenitors that managed to loose their entire hydrogen envelope? I address these questions by taking advantage from panchromatic observations of two remarkable explosions: the puzzling, double explosion of SN2009ip in 2012, and the mildly relativistic, engine-driven SN2012ap, that bridges the gap between ordinary explosions and fully relativistic gamma-ray bursts.

Listen to SN2009ip: https://www.cfa.harvard.edu/~rmargutt/

Presenter: MARGUTTI, Raffaella (Harvard University)

Contribution ID: **33** Type: **not specified**

Blood Flow Quantification with Phase Contrast in Magnetic Resonance Imaging

Tuesday, 10 June 2014 10:00 (1 hour)

Magnetic Resonance Imaging provides some of the most powerful techniques to study in vivo the vascular tree and a large spectrum of phenomena related to blood flow. In this context, Phase Contrast pulse sequences play a central role in the flow quantification of arterial and venous vessels. After a brief introduction to NMR signal formation and its spatial reconstruction, the theory of flow-encoding through the application of bipolar gradient will be presented, and the link between phase-difference reconstruction and velocity-mapping will be described, in order to show the feasibility of blood flow quantification. Finally, an outlook on some advanced issues will provide an insight on time-resolved 2D/3D flow reconstructions and on the accuracy of the results.

Presenter: Dr PALMA, Giuseppe (CNR - IBB Napoli)

Contribution ID: **34** Type: **not specified**

Relevance of precision measurements of charged cosmic rays (100 MeV - 1 TeV) with the space experiment Pamela in solar, galactic and high energy physics

Tuesday, 3 June 2014 14:30 (1 hour)

The Pamela spectrometer was launched in 2006 from the cosmodrome of Baikonur, Kazakistan, on board the Russian satellite Resurs-DK1. Since then, it has been collecting cosmic rays from its 70 degrees inclination, 600 km altitude polar orbit. This orbit allows to sample particles of trapped, semi-trapped nature in the Earth geomagnetosphere, of solar origin (emitted in solar particle events), of galactic origin (modulated by solar activity). Antiparticles of galactic origin can constrain and provide information on the dark matter component in the galaxy. Furthermore the Proton and Helium spectra provide detail information on the acceleration and propagation processes in the galaxy. In this talk we will discuss some of these recent results of Pamela and the relevance for cosmic ray physics.

Presenter: CASOLINO, Marco (INFN and RIKEN)

Contribution ID: **35** Type: **not specified**

Dark Matter Searches in the Sky and Underground

Thursday, 5 June 2014 14:30 (1 hour)

The existence of a source of gravitational effects beyond regular matter is
well established, but its nature remains a deep mystery.
In principle, Dark Matter particles could be detected either directly, via their
interaction on target nuclei, or indirectly, by observing their annihilation in galaxy halos.

Since 2007, tremendous progress has been achieved in both direct and
indirect detection efforts.
In this talk, I will review the leading experimental
techniques for Dark Matter detection,
both from space-based observatories and from detectors placed underground.
As an example, I will present the results
from the Fermi Large Area
Telescope (which was launched in 2008) and from the DarkSide detector
(currently taking data at the Gran Sasso Laboratory).

Presenter: MONZANI, M. E. (SLAC)

Contribution ID: **36** Type: **not specified**

Properties of matter at high baryonic density: a fundamental discovery within reach.

Wednesday, 18 June 2014 15:00 (1 hour)

Abstract:
Over the last few years, a strong synergy has been developing among research areas apparently quite separated, offering the possibility to investigate several crucial questions in hadronic and nuclear physics, astrophysics, and gravitational physics from complementary viewpoints. The main goal of this research is to discover the composition of matter at supra-nuclear density, which, in turn, would allow us to map in a more complete way the phase diagram of matter under extreme conditions, by complementing the information at high temperature and low baryonic density that is already investigated in heavy-ion collision experiments at energies larger than about 100 AGeV, such as the ones performed by ALICE at CERN. A few fundamental questions wait to be answered, in particular:

- At which baryonic densities do quarks start to deconfine? Is there at all a deconfinement critical density?
- Is there a critical point in the phase diagram of matter at large densities and temperatures?
- Is Witten's hypothesis about the absolute stability of strange quark matter realized in compact stars?
- Are supernova explosions and gamma-ray bursts associated to phase transitions in dense matter?

These questions are deeply connected with a fundamental problem: at which densities can strange hadrons be produced and what is their impact on the equation of state of matter? The solution of this problem has become extremely urgent after the discovery of compact stars having a mass of at least two solar masses: the so-called "hyperon puzzle"has to do with the difficulties in explaining the stability of very massive stars while taking into account the production of strange hadrons, as requested by the present laboratory data. The solution of this problem, crucial both for nuclear-hadronic physics and for astrophysics, is at the moment unknown and it could indicate that the interaction of strange hadrons is deeply different from what is known at the moment or that deconfined quarks appear at least in the most massive stars.

In order to answer these questions, the collaboration among various research areas is not only useful, but rather essential. The reason is that results obtained only from laboratory experiments or only from X-ray satellites would not be able to address the questions above. For instance, the discovery that Witten's hypothesis is indeed realized in Nature can come only from: a) laboratory experiments revealing at which densities strange hadronic matter starts being formed; b) theoretical studies investigating the implications of strangeness deposition on the stability of matter and, obviously, c) the measurement of masses and radii of compact stars via observations from gravitational-wave detectors and X-ray

satellites. Separately, each of these investigations could provide some hints, but cannot give a definitive answer.

Presenter: DRAGO, Alessandro (Universita' di Ferrara)

Contribution ID: **37** Type: **not specified**

E dopo il bosone di Higgs?

Monday, 16 June 2014 14:30 (1 hour)

Verranno discusse le prospettive che si aprono davanti
a noi nella ricerca di segnali di nuova fisica alle alte energie,
all'alta intensita' e nella fisica astroparticellare.

Presenter: Prof. MASIERO, Antonio (INFN e Universita' di Padova)

Contribution ID: **38** Type: **not specified**

Axion dark matter: constraints from cosmological observations

Wednesday, 25 June 2014 15:00 (1 hour)

The nature of dark matter is one of the most puzzling open problems of cosmology and particle physics. Axions and axion-like particles (ALPs), like the majoron, are plausible candidates for the role of dark matter. In my talk I will review the constraints that can be put on the properties of axions from the most recent observations of the temperature and polarization anisotropies of the cosmic microwave background, in conjunction with the measurements of baryon acoustic oscillations and other cosmological data.

Presenter: LATTANZI, Massimiliano (Universita' di Ferrara)

Contribution ID: **39** Type: **not specified**

Using photon-photon scattering to investigate the nature of quantum vacuum

Thursday, 19 June 2014 15:00 (1 hour)

Abstract: Photon-photon scattering is an elusive and yet extremely important process, which offers a unique glimpse into the vacuum of quantum electrodynamics. Here I discuss the experimental opportunities of a direct observation of this process, and their relevance to our understanding of quantum vacuum.

Presenter: MILOTTI, Edoardo (Universita' di Trieste e INFN)

Contribution ID: **40** Type: **not specified**

Something about Dark Energy

Thursday, 3 July 2014 14:30 (1 hour)

Beyond the standard cosmological mode, in which the Dark Energy is provided by the Cosmological Constant, the late-time accelerated expansion of the Universe can be reproduced by the introduction of an additional dynamical scalar field. In this case, the field is expected to be naturally coupled to the rest of the theory's fields, unless a (still unknown) symmetry suppresses this coupling. After a brief introduction about Dark Energy, the history of its "discovery" and its theoretical problems, I will show some results of the study of the possible coupling between a dynamical Dark Energy model and the electromagnetic field, and the corresponding evolution of the fine structure constant with the respect to the standard local value.

Presenter: PANDOLFI, Stefania (Dark Cosmology Centre, Niels Bohr Institute, University of Copenhagen)

Contribution ID: **41** Type: **not specified**

N-body lensed CMB maps: lensing extraction and characterization

Thursday, 18 September 2014 14:30 (1 hour)

After multiple high precision detections (ACT, SPT, Planck) gravitational lensing has become a new source of relevant cosmological information: combining it with other probes (e.g. the large scale structure) can give significant insight on the evolution of the Dark Energy component. Developing new algorithms of estimate of this signal will allow the community to exploit this observable as a new and independent probe in cosmology.

In my talk I will present the reconstruction of the lensing shear pattern and its angular power spectrum from total intensity and polarised CMB maps obtained using Born approximated ray-tracing through N-body simulated structures.The recovered spectra are in agreement with predictions of the underlying ΛCDM with no visible bias, on a scale interval which extends from the arcminute to several degrees over the sky. This demonstrates the feasibility of CMB lensing studies based on large scale simulations of cosmological structure formation in the context of the upcoming large observational campaigns. First results on the extraction of the lensing spectrum from CMB maps lensed by N-body simulations with massive neutrinos will also be discussed.

Presenter: ANTOLINI, Claudia (SISSA, Trieste)

Contribution ID: **42** Type: **not specified**

PRELIMINARY STUDY ON THE USE OF RADIONUCLIDES 137Cs AND 210Pb AND SPECTRORADIOMETRY TECHNIQUES AS TOOLS TO DETERMINE SOIL EROSION STATES

Monday, 29 September 2014 15:00 (1 hour)

Natural (210Pbunsupported, 226Ra, 210Po and 7Be) and artificial (239,240Pu, 137Cs) radionuclides are largely used as tools for studying and quantifying soil erosion. The global fallout of artificial radionuclides derived from weapons testing that took place during the 1940's and the 1960's was rapidly and firmly fixed in the soil surface, allowing to calculate further soil erosion by comparing inventories at individual sampling points with a reference inventory representing the local fallout input. This procedure is complemented with the 210Pbuns inventory calculation as indicator of the local average of radionuclides deposition.

Spectroradiometry is a further technique in the determination of soil erosion processes, by characterising soil surface reflectance values and relating these with soil properties such as structure, texture, mineral composition and organic matter content obtained from laboratory analyses. The effect of erosion on these soils implies the presence of contrasting soil horizons emerging at the surface. In this study, surface reflectance measurements of soil samples are determined and associated to data obtained from the laboratory analyses.

This is a preliminary study about the use of both, radionuclides determination and laboratory spectroradiometry techniques, to evaluate soil erosion processes in well-developed soils in an agricultural area near to Camarena within the Province of Toledo (Central Spain).

The methodology includes the test of the sampling devices during the sampling campaign, the radionuclides analysis at different soil depths and the determination of their activity concentration levels by means of gamma spectrometry. Spectroradiometry is implemented to associate soil surface reflectance measurements to soil properties related to soil erosion processes.

The inventories for 137Cs and 210Pbexc are similar to the Spanish reference inventories for semiarid areas and allows comparing them. Furthermore, gamma spectrometry data are appropriate to be implemented in mathematical models and for applying the in situ technique in further work. Spectroradiometry results correlate well with soil properties measured in the laboratory and can easily be applied to determine these properties more quickly and easily, as well as for integration with gamma spectrometry results.

This preliminary erosion study applying both instrumental techniques shows consistent results, however, ongoing work is needed to statistically validate these results. In this case, both techniques are complementary with coherent results.

Presenter: RODRÍGUEZ VEGAS, Eva (Research Center for Energy, Environment and Technology (CIEMAT, Madrid, Spain))

Contribution ID: **43** Type: **not specified**

Recent results from the AMS-02 experiment

Friday, 24 October 2014 09:30 (1 hour)

The Alpha Magnetic Spectrometer is a precision particle physics detector installed on the International Space Station since May 19, 2011. More than 40 billion of cosmic ray particles have been collected in its first 30 months of operations and nearly 11 million electron and positrons have been selected among them to accurately measure their fluxes in an extended energy range. Results on the positron fraction, e+, e- and combined (e++e-) fluxes will be discussed as well as the detector performances and analysis techniques used to achieve them.

Presenter: BERTUCCI, Bruna (Universita' e INFN di Perugia)

Contribution ID: **44** Type: **not specified**

Prospects for dense baryonic matter research at Nuclotron-NICA: BM@N & MPD experiments

Friday, 31 October 2014 11:00 (1 hour)

The NICA (Nuclotron-based Ion Collider fAcility) Project is now under the active realization stage at the Joint Institute for Nuclear Research (JINR, Dubna). The main goal of the Project is an experimental study of hot and dense strongly interacting matter in heavy ion (up to Au) collisions at centre-of-mass energies √s_NN = 4 - 11 GeV (NN-equivalent) and the average luminosity 10E27 cm-2 s-1 for Au(79+). In parallel, fixed target experiments at the upgraded JINR superconducting synchrotron Nuclotron will be carried out with extracted beams of various nuclei up to Au(79+) with maximum momenta 13 GeV/c (for protons). Two modes of operation are foreseen, collider mode and extracted beam mode, with two detectors: MPD and BM@N. The both experiments are in a preparation stage. The project also foresees a study of spin physics with extracted and colliding beams of polarized deuterons and protons at energies up to √s = 26 GeV (for protons) and the average luminosity 10E32 cm-2 s-1. The proposed experimental program allows one to search for possible signs of phase transitions and critical phenomena as well as to shed light on the problem of the nucleon spin structure. The general NICA design and construction status, physical program will be overviewed.

Presenter: SORIN, A.S. (Joint Institute for Nuclear Research, Dubna)

Contribution ID: **45** Type: **not specified**

Dark matter, sterile neutrinos and IceCube neutrino events

Tuesday, 28 October 2014 15:00 (1 hour)

I shall discuss a scenario which can explain the shape and flavor content of very high en ergy neutrinos observed recently by IceCube collaboration. It works as follows: dark matter decay produces very high energy sterile neutrinos, with energies order PeV, which then oscillate into active neutrinos with proper oscillation probabilities, producing VHE neutrinos with specific spectrum.

Presenter: ZURAB, Berezhiani (Universita' dell'Aquila & INFN-LNGS)

Contribution ID: **46** Type: **not specified**

Le sfide computazionali del Run 2 di LHC

Monday, 17 November 2014 16:30 (1 hour)

Abstract:
In questo seminario verra' discusso il modello computazionale e di movimentazione dati che si sta delineando per l'imminente ripartenza degli esperimenti presso l'LHC, il Large Hadron Collider del CERN di Ginevra.
Inizialmente sara' presentato il Large Hadron Collider ed il lavoro svolto durante la lunga fase di stop degli acceleratori iniziata nel 2013, in preparazione della nuova fase di raccolta dati, il Run 2, programmata a partire da Marzo 2015. Saranno inoltre introdotti alcuni elementi costituenti dei rivelatori e le sfide cui saranno esposti durante il Run 2.
In seguito verra' illustrato il paradigma di calcolo e analisi dati degli esperimenti dell'LHC, con particolare riguardo alla gestione dei flussi di dati, sia all'interno del CERN sia verso gli istituti partner attraverso la Grid. Sara' quindi presentato il ruolo del nuovo Data Center che si trova a Wigner, in Ungheria. Infine, sara' presentata brevemente la gestione di un grande centro di calcolo e le soluzioni adottate al CERN.

Presenter: LO PRESTI, Giuseppe (CERN IT/Data and Storage Services)

Contribution ID: **47** Type: **not specified**

Beam extraction with crystal at CERN, the CRYSBEAM project

Tuesday, 2 December 2014 11:00 (1 hour)

"A new generation of parasitic beam extraction of high energy particles from an accelerator is proposed in CRYSBEAM. CRYSBEAM received an ERC Consolidator Grant of the FP7-IDEAS European programme. Instead of massive magnetic kickers, bent thin crystals trapping particles within the crystal lattice planes are used.
The first goal of the proposal is to demonstrate that bent crystals can be used to efficiently extract beam halo from the SPS. After this, one should aim at proposing a scenario for halo extraction in the LHC. Several TeV energy protons or ions should be deflected towards a chosen target by the bent lattice planes only when the lattice planes are parallel to the incoming particles direction. This type of beam manipulation could open new fields of investigation
of fundamental interactions between particles, and of coherent interactions between particles and matter.
An experiment in connection to Ultra High Energy Cosmic Rays study is now also proposed in the framework of CRYSBEAM."

Presenter: CAVOTO, Gianluca (Università Roma La Sapienza)

Contribution ID: **48** Type: **not specified**

Polarization measurements of Lambda particles in pp collisions at 2.76 and 7 TeV in the ALICE experiment.

Friday, 12 December 2014 11:00 (1 hour)

Measurements of transverse polarization of lambda hyperons produced in high energy pp collisions may help to address several open issues about lambda production and polarization mechanisms, such as the origin of spontaneous lambda polarization. Its decay into a proton and a pion in a parity violating weak decay enables the determination of the Λ hyperon polarization by measuring the angular distribution of its decay products. In order to correct for the acceptance and efficiency of the detector MC data samples were also analyzed. The corrected longitudinal and transverse polarization has been measured as function of pT and pseudorapity in minimum bias events collected by the ALICE experiment at sqrt(s) = 2.76, and 7 TeV pp collisions.

Presenter: CALERO DIAZ, Liliet (INFN Frascati)

Contribution ID: **49** Type: **not specified**

: How to fly and to operate a payload on board the International Space Station (ISS).

Wednesday, 17 December 2014 11:00 (1 hour)

The International Space Station (ISS) is a space station, or a habitable artificial satellite, in low Earth orbit from 350 up to 450 km. The orbital period is 90 minutes, the inclination to the equatorial plane is 51.6.
The ISS is a modular structure whose first component was launched in 1998. The ISS serves as a microgravity and space environment research laboratory in which Crew members conduct experiments in biology, human biology, physics, astronomy, meteorology and other fields. The station is suited for the testing of spacecraft systems and equipment required for missions to the Moon and Mars. The ISS programme is a joint project among five participating space agencies: NASA, Roscosmos, JAXA, ESA, and CSA .
The lecture will deal with an overview of the ISS module, in terms of size, power and data distribution, and of the features Racks in the US LAB and in COLUMBUS. How the microgravity condition is established, the rotation of Astronaut and carriers is organized, and the life and the work of Astronaut are planned on board ISS will be the topics of the second part of the presentation
The integration process for a payload on board the launching carrier and the iSS, and the long term operations performed by European USOC will complete the lecture.
The attention of the audience will be then moved to the Drain Brain project, UNIFE will illustrate the scientific goals of the experiment and a payload description.

Presenter: CASTAGNOLO, Dario (Telespazio (Napoli))