PHENOEXP 2018: LHC Physics and beyond

Report of Contributions

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

Synchrotron Emission from a Flavored Dark Matter Model as An Explanation of ARCADE-2 Excess

Wednesday, 9 May 2018 14:15 (15 minutes)

We explore the synchrotron signals generated by flavored Dark Matter candidate with mass region between 10-20 GeV annihilating into the leptonic channels e^+e^- and $\mu^+\mu^-$. In these models, the interactions are skewed in flavor space, so that a dark matter particle never couples directly to the Standard Model matter fields of the same flavor, but only to the other two flavors. So, these models can bring interesting results when analyzed as an attempt to explain the Radio observations at multiple frequencies, especially in the region between 22 MHZ and 10 GHz, the well known ARCADE-2 Excess. We present the signal brightness temperature for a sort of frequencies considering the mass region of 10-20 GeV for the dark matter candidate and show that the analysed model can fit such excess.

Primary authors: Prof. FORTES, Elaine (UNIPAMPA); Prof. D MIRANDA, Oswaldo (INPE)

Presenter: Prof. FORTES, Elaine (UNIPAMPA)

Session Classification: Short Communications

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

Perturbative QCD around 2 GeV

Thursday, 10 May 2018 11:50 (15 minutes)

We will discuss issues related to the use of perturbative QCD at relatively low energies. The theoretical problems that arise are often fundamental and touch, for instance, the very nature of the perturbative expansion. We have in mind applications to hadronic tau decays, which remains an important source of information about the strong coupling, α_s. We will discuss renormalon singularities, scheme variations, and a novel approach to the violations of quark-hadron duality — which go beyond perturbation theory. The impact on the precise extraction of α_s will be emphasised.

Primary author:　BOITO, Diogo (Universidade de São Paulo)

Presenter:　BOITO, Diogo (Universidade de São Paulo)

Session Classification:　Short Communications

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

Connecting Dark Matter with Long Lived Particles at the LHC

Wednesday, 9 May 2018 13:45 (15 minutes)

Long-lived particles naturally appear in models where Dark Matter is produced through the freeze-in mechanism. We discuss how the LHC constraints on long-lived particles can be used to test these scenarios. In particular, using a simplified model, we illustrate how the CMS constraints on heavy stable charged particles can severely constrain the Dark Matter parameter space.

Primary author: Prof. LESSA, Andre (CCNH - Univ. Federal do ABC)

Presenter: Prof. LESSA, Andre (CCNH - Univ. Federal do ABC)

Session Classification: Short Communications

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

Measurement of inclusive jet and dijet cross-sections in pp collisions at 13 TeV with the ATLAS detector and comparison to NNLO predictions

Thursday, 10 May 2018 12:05 (15 minutes)

Inclusive jet and dijet cross-sections were measured in proton-proton collisions at a centre-of-mass energy of 13 TeV. The measurement uses a dataset with an integrated luminosity of 3.2 fb−1 with the ATLAS detector at the Large Hadron Collider. Jets are identified using the anti-kt algorithm with a radius parameter value of R=0.4. The inclusive jet cross-sections are measured double-differentially as a function of the jet transverse momentum, covering the range from 100 GeV to 3.5 TeV, and the absolute jet rapidity up to |y|=3. The double-differential dijet production cross-sections are presented as a function of the dijet mass, covering the range from 300 GeV to 9 TeV, and the half absolute rapidity separation between the two leading jets within |y|<3, y∗, up to y∗=3. Next-to-leading-order, and next-to-next-to-leading-order perturbative QCD calculations corrected for non-perturbative and electroweak effects are compared to the measured cross-sections.

Primary authors: BOSSIO, Jonathan (Universidad de Buenos Aires (AR)); MARCECA, Gino (Universidad de Buenos Aires (AR)); PIEGAIA, Ricardo (Universidad de Buenos Aires (AR))

Presenter: MARCECA, Gino (Universidad de Buenos Aires (AR))

Session Classification: Short Communications

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

UBA @ ATLAS

Wednesday, 9 May 2018 16:30 (15 minutes)

This talk includes some of the current working areas of the Buenos Aires group at the three levels of the ATLAS data processing chain: trigger, performance and physics analyses.
Within trigger development, the tuning of the b-jet trigger and improvement of jet trigger efficiency are discussed.
Next, the jet energy calibration and resolution are presented.
Finally, beyond Standard Model searches for extra dimensions, composite quarks, DM and FC Higgs couplings are shown.

Primary authors: BOSSIO, Jonathan (Universidad de Buenos Aires (AR));   DANERI, Maria Florencia (Universidad de Buenos Aires (AR));   DEVESA, Maria Roberta (Universidad de Buenos Aires (AR));   OTERO Y GARZON, Gustavo (Universidad de Buenos Aires (AR));   PIEGAIA, Ricardo (Universidad de Buenos Aires (AR))

Presenter: BOSSIO, Jonathan (Universidad de Buenos Aires (AR))

Session Classification: Short Communications

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

Into the dark sector: new probes and model-building

Wednesday, 9 May 2018 14:00 (15 minutes)

There has been a lot of activity about dark sectors in the recent years. Still, it seems like exciting ideas remain to be found and/or developed.

In this talk I will first review two recent ways of searching for a dark sector using virtual dark particles, which have been presented in arXiv:1609.01762/1705.10331/1710.00850.

Secondly, in the spirit of the workshop, I will discuss a new direction which seems certainly worth investigate: dark particle's "double fluxes" from nucleons or electrons. This might open a number of possibilities for dark sector searches at colliders.

Then I will outline a broad scenario, the "Conformal Dark Sector" (CDS), which seems to be a natural possibility to UV-complete a number of low-energy phenomenological scenarios, rendering them relatively immune to high-energy probes. The CDS scenario has characteristic predictions such as non-integer fifth forces, and deserves further investigations in many aspects including DM phenomenology, cosmology, and collider searches.

Primary author: Dr FICHET, sylvain

Presenter: Dr FICHET, sylvain

Session Classification: Short Communications

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

Multiple Higgs Production at the LHC

Thursday, 10 May 2018 11:20 (15 minutes)

In the present talk we will discuss the current status and recent advances in the calculation of the cross section for multiple Higgs production at the LHC, both in the SM as in EFT extensions of it.

Primary author: FABRE, Ignacio (ICAS-UNSAM)

Presenter: FABRE, Ignacio (ICAS-UNSAM)

Session Classification: Short Communications

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

Searching for Physics Beyond The Standard Model: signals from R-parity breaking supersymmetry

Wednesday, 9 May 2018 17:15 (15 minutes)

Supersymmetry is a very well motivated framework for physics beyond the standard model. Most of the analyses are carry out in R-parity conserving models, as for instance the Minimal Supersymmetric Standard Model (MSSM). In this context the lightest supersymmetric particle (LSP) is a good dark matter candidate. However, the fact that neutrino are massive, the absent of direct detection signals of dark matter, and the absent of missing energy signals at the LHC, motivates models without R-parity. In this context the expected signals at the LHC are more involved, for instance displaced-vertex analysis for LHC data are required.

We analyze possible detectable signals at the LHC for different LSP in R-parity breaking models, as also dark matter candidates detectable by indirect detection searches. We mainly work in the context of the mu-from-nu Supersymmetric Standard Model, or munuSSM. This model includes right-handed neutrinos in the spectrum, opening the possibility of very interesting interpretations including a relation between R-parity breaking and neutrino physics.

Primary author: Dr LOPEZ-FOGLIANI, Daniel E. (IFIBA (UBA-CONICET))

Presenter: Dr LOPEZ-FOGLIANI, Daniel E. (IFIBA (UBA-CONICET))

Session Classification: Short Communications

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

Search for non-standard SUSY Final States at the LHC

Wednesday, 9 May 2018 16:15 (15 minutes)

Several years of LHC data taking has left us empty handed when it comes to SUSY search results. That means one of three things:

1) Nature is not supersymmetric

2) The cross-sections/masses involved are still outside the reach of the LHC.

3) Our search strategies aren't sensitive to the SUSY final states.

While the first two points will take a long time to prove, work is urgently needed to check the 3rd option. In this presentation we discuss the possibility of sensitivity gaps in our LHC analyses that might lead to fact that we have missed SUSY in our existing data set.

Primary authors: HENSEL, Carsten (CBPF - Brazilian Center for Physics Research (BR)); BRANDAO MALBOUISSON, Helena (Universidade do Estado do Rio de Janeiro (BR))

Presenter: HENSEL, Carsten (CBPF - Brazilian Center for Physics Research (BR))

Session Classification: Short Communications

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

Looking for NP in 3rd generation observables at the LHC

Wednesday, 9 May 2018 15:15 (15 minutes)

We discuss how NP signals may show up in 3rd generation observables at the LHC.

Primary author: ALVAREZ, Ezequiel (ICAS)

Presenter: ALVAREZ, Ezequiel (ICAS)

Session Classification: Short Communications

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

Limits on Exotics Bosons at LHC

Wednesday, 9 May 2018 17:00 (15 minutes)

I will present recent results on searching for two exotics signal at LHC: torsion and bileptons. Torsion models constitute a well known class of extended quantum gravity models. In this work, one investigates the phenomenological consequences of a torsion field interacting with top quarks at the LHC. A torsion field could appear as a new heavy state characterized by its mass and couplings to fermions. This new state would form a resonance decaying into a top anti-top pair. The latest ATLAS $t\bar{t}$ production results from LHC 13 TeV data are used to set limits on torsion parameters. Bileptons are bosons which have double electric charge and leptonic number. They are predicted in 331 models. We perform a study assuming different bilepton masses and calculate cross-section for different process mediated by bileptons. Combining these calculations with the latest ATLAS results at 8 TeV, we derive, for the first time, bounds on bilepton mass using LHC data. A detector simulation is also performed using the DELPHES package assuming a LHC center-of-mass energy of 13 TeV. The results of the simulation are used to obtain minimal integrated luminosities needed for discovering torsion and bileptons at LHC 13 TeV.

Primary author: ASEVEDO NEPOMUCENO, Andre (Federal University of of Rio de Janeiro (BR))

Presenter: ASEVEDO NEPOMUCENO, Andre (Federal University of of Rio de Janeiro (BR))

Session Classification: Short Communications

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

Pheno @ Instituto de Física La Plata

Wednesday, 9 May 2018 16:45 (15 minutes)

We briefly present in this talk part of the work that the group of phenomenology at the IFLP (Conicet - Universidad de La Plata) has been carrying out over the last few years and some of the prospects for the near future. The studies to be addressed include topics in Higgs and top physics and a preliminar analysis on dark matter. In particular, we discuss lepton flavor violation in Higgs decays, pair production of heavy Higgs bosons at the LHC, CP-odd observables in the top-Higgs interaction and the building of a WIMP model that naturally evades the stringent constraints from dark matter direct detection.

Primary author: SZYNKMAN, Alejandro

Co-authors: ARGANDA, Ernesto; MEDINA, Anibal; MILEO, Nicolas; MORALES, Roberto; DIAZ, Daniel

Presenter: SZYNKMAN, Alejandro

Session Classification: Short Communications

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

ATLAS @ Instituto de Física La Plata

Wednesday, 9 May 2018 16:00 (15 minutes)

The talk includes some of the current working areas of the La Plata group in the ATLAS experiment. The trigger is one of the essential pieces of the ATLAS detector. The e/gamma trigger performance studies to understand, improve and also provide the trigger efficiency to the precision analyses and searches for new physics are presented. Next step in the chain towards data analysis is the reconstruction of the physics objects. In particular, the electron and photon isolation are discussed. After the Higgs discovery, the interest of the group moved towards its characterisation. Spin, CP properties and cross-section studies in the Higgs decaying into photons analyses are summarised. Within the BSM theories, like NMSSM, the light Higgs boson could have different exotic decays that are being explored. Events containing photons and missing energy (plus jets or leptons) are distinctive signatures of SUSY models with gauge-mediated supersymmetry breaking. Several searches for SUSY with different final states are presented as well as prospects for discovery with the full Run 2 dataset.

Primary author: ALONSO, Francisco (National University of La Plata (AR))

Presenter: ALONSO, Francisco (National University of La Plata (AR))

Session Classification: Short Communications

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

Bc charmless three body decays

Wednesday, 9 May 2018 15:00 (15 minutes)

A study of $B_c^+ \to K^+ K^{-+}$ decays was performed with data corresponding to $3.0 fb^{-1}$ collected by LHCb at 7 and 8 TeV . Evidence for the decay $B_c^+ \to {}_{c0}(K^+ K^-)^+$ and indication of $\bar{b}c$ weak annihilation are reported. Prospects of studies of decays in other channels will be discussed.

Primary authors: SALAZAR DE PAULA, Leandro (Federal University of of Rio de Janeiro (BR)); MENDES GANDELMAN, Miriam (Federal University of of Rio de Janeiro (BR)); HICHEUR, Adlene (Federal University of of Rio de Janeiro (BR)); COLLABORATION, LHCb

Presenter: SALAZAR DE PAULA, Leandro (Federal University of of Rio de Janeiro (BR))

Session Classification: Short Communications

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

Search for new physics at CMS collaboration.

Wednesday, 9 May 2018 17:30 (15 minutes)

The São Paulo Research and Analysis Center (SPRACE) works on the analyses of the data collected by CMS. One of our main interest is the search for physics beyond standard model. In this talk I will present some of the physics studies that are being pursued at SPRACE, in particular our contribution to the search of dark matter.

Primary author:　　GALLI MERCADANTE, Pedro (UNESP - Universidade Estadual Paulista (BR))

Presenter:　GALLI MERCADANTE, Pedro (UNESP - Universidade Estadual Paulista (BR))

Session Classification:　Short Communications

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

Dark Matter from a vector field in the fundamental representation of SU(2)

Wednesday, 9 May 2018 13:30 (15 minutes)

We explore a simple extension of the Standard Model which incorporates a vector field in the fundamental representation of SU(2)L as the only non-standard degree of freedom. This kind of field may appear in models where a new strong sector produce the Higgs doublet as a composite state but does not break the chiral symmetry. We study the model in the presence of a discrete Z2 symmetry. As a consequence, the neutral CP-even component of the new vector field becomes a Dark Matter candidate. We constraint the values of the model parameters from unitarity bounds, $h \rightarrow \gamma\gamma$ measurements, electroweak precision tests, cosmological observations and current dark matter searches.

Primary author: Mr DIAZ, Bastian (Federico Santa Maria Technical University)

Presenter: Mr DIAZ, Bastian (Federico Santa Maria Technical University)

Session Classification: Short Communications

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

CP violation in charmless three-body B± meson decays at LHCb

Wednesday, 9 May 2018 14:45 (15 minutes)

Searches for CP violation in the decays of B hadrons without charmed particles in the final state offer rich opportunities to test the Standard Model. Charmless b-hadron decays are suppressed in the Standard Model by small CKM matrix elements which brings the tree amplitudes to levels comparable with loop amplitudes, and potentially New Physics amplitudes. CP violation measurements using Dalitz plot analyses in multi-body decays allow to disentangle these various contributions. We report the most recent measurements from LHCb on charmless B± meson three-body decays, considering final states containing only charged light mesons: $\pi-\pi-\pi+$, $K-\pi-\pi+$, $K-\pi-K+$ and $K-K-K+$. A study of the distribution of CP asymmetries in the B± meson decay phase space is presented.

Primary author: Dr NASTEVA, Irina (Federal University of of Rio de Janeiro (BR))

Presenter: Dr NASTEVA, Irina (Federal University of of Rio de Janeiro (BR))

Session Classification: Short Communications

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

Charged pion masses under strong magnetic fields

Thursday, 10 May 2018 14:50 (10 minutes)

The behavior of charged pion masses in the presence of a static uniform magnetic field is studied in the framework of the two-flavor NJL model, using a magnetic field-independent regularization scheme. Analytical calculations are carried out employing the Ritus eigenfunction method, which allows us to properly take into account the presence of Schwinger phases in the quark propagators. Numerical results are obtained for definite model parameters, comparing the predictions of the model with present lattice QCD results.

Primary authors: COPPOLA, Máximo (CNEA); UNKNOWN, UNKNOWN; Prof. GOMEZ DUMM, Daniel (IFLP, CONICET - Dpto. de Física, Fac. de Cs. Exactas, Universidad Nacional de La Plata, Argentina)

Presenter: COPPOLA, Máximo (CNEA)

Session Classification: Working Group: QCD

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

Probing the Sea Quark Content of the Proton with One-Particle-Inclusive Processes

Thursday, 10 May 2018 11:35 (15 minutes)

We investigate the feasibility of constraining parton distribution functions in the proton through a comparison with data on semi-inclusive deep-inelastic lepton-nucleon scattering. Specifically, we reweight replicas of these distributions according to how well they reproduce recent charged kaon multiplicity measurements and analyze how this procedure optimizes the determination of the sea quark densities and improves their uncertainties. The results can help to shed new light on the long standing question on the size of the flavor and charge symmetry breaking among quarks of radiative origin. An iterative method is proposed and adopted to account for the correlation with what is assumed about the parton-to-hadron fragmentation functions in the reweighting procedure. It is shown how the fragmentation functions can be optimized simultaneously in each step of the iteration. As a first case study, we implement this method to analyze kaon production data.

Primary authors: Mr BORSA, Ignacio (Universidad de Buenos Aires); SASSOT, Rodolfo (Universidad de Buenos Aires); STRATMANN, Marco (Brookhaven National Laboratory)

Presenter: Mr BORSA, Ignacio (Universidad de Buenos Aires)

Session Classification: Short Communications

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

Amplitude Analysis of D decays to three hadrons in the LHCb experiment

Wednesday, 9 May 2018 14:30 (15 minutes)

The study of a heavy meson decaying to three lighter mesons can be described, in general, as quasi-two-body processes through the production of resonance intermediate states. To understand the dynamics of these processes, a full amplitude analysis of the corresponding Dalitz Plot (the two-dimensional representation of the decay phase space) is necessary. The most naïve way to describe it is to use the so-called Isobar Model where the total amplitude is written as a coherent sum of the individual resonance amplitudes, typically described as a product of the resonance propagator, angular functions and form factors. However, the Isobar Model turns out to be inadequate when dealing with broad scalar states and other approaches such as a model-independent partial wave analysis, K matrix, are interesting alternatives.

We show the current status of the amplitude analyses of the D decays into three mesons being pursued by the Rio Charm Group at the LHCb experiment.

Primary authors: CORREA DOS REIS, Alberto (CBPF - Brazilian Center for Physics Research (BR)); GOBEL BURLAMAQUI DE MELLO, Carla (Pontifical Catholic University of Rio de Janeiro (BR)); POLYCARPO MACEDO, Erica (Federal University of of Rio de Janeiro (BR)); GONCALVES ABRANTES, Fernanda (Pontifical Catholic University of Rio de Janeiro (BR)); BAPTISTA, Juan (Universidade do Estado do Rio de Janeiro (BR)); AMATO, Sandra (Univ. Federal do Rio de Janeiro (BR))

Presenter: GONCALVES ABRANTES, Fernanda (Pontifical Catholic University of Rio de Janeiro (BR))

Session Classification: Short Communications

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

Strong magnetic fields in nonlocal chiral quark models

Thursday, 10 May 2018 14:30 (10 minutes)

We study the behavior of strongly interacting matter under a uniform intense external magnetic field in the context of nonlocal extensions of the Polyakov–Nambu–Jona-Lasinio model. A description of the formalism is presented, considering the cases of zero and finite temperature. In particular, we analyze the effect of the magnetic field on the chiral restoration and deconfinement transitions, which are found to occur at approximately the same critical temperatures. Our results show that these models offer a natural framework to account for the phenomenon of inverse magnetic catalysis found in lattice QCD calculations.

Primary authors: GOMEZ DUMM, Daniel (IFLP, CONICET - Dpto. de Física, Fac. de Cs. Exactas, Universidad Nacional de La Plata, Argentina); FLORENCIA IZZO VILLAFAÑE, María; NOGUERA, Santiago (Universidad de Valencia); PAGURA, Valeria (Universidad de Valencia - CSIC); UNKNOWN, UNKNOWN

Presenter: FLORENCIA IZZO VILLAFAÑE, María

Session Classification: Working Group: QCD

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

Hadron-Quark phase transitions in Neutron Stars inner cores

Thursday, 10 May 2018 15:00 (10 minutes)

The discovery of high mass Millisecond Pulsars such as J1946+3417 ($1.832 \pm 0.028 M_\odot$), J1614-2230 ($1.928 \pm 0.017 M_\odot$) and J0348+0432 ($2.01 \pm 0.04 M_\odot$) allows the
possible existence of deconfined quarks in the Neutron Stars inner core. In order to represent the matter under extremely high density conditions, we obtain a hadron-quark hybrid equation of state by considering the non linear relativistic mean-field approximation for the hadronic matter phase, and the three-flavor non-local Nambu$-$Jona-Lasinio (NJL) model,
with repulsive vector interactions, for the quark matter. The transition from hadronic to quark matter (mixed phase) is constructed by considering a soft phase transition and imposing global electric charge neutrality condition (Gibbs construction). Depending on the strength of quark vector repulsion, we find that an extended region made of a mixed phase of quarks and hadrons may exist in high-mass Neutron Stars with masses up to $2.1 - 2.4 M_\odot$. Our study also indicates that Neutron Stars with masses of around $1.4\,M_\odot$ would not contain deconfined quark matter. Recent developments and some preliminary results at finite temperature to study the stability of Proto-Neutron Stars will also be presented.

Primary author: CONTRERA, Gustavo (IFLP (UNLP-CONICET))

Presenter: CONTRERA, Gustavo (IFLP (UNLP-CONICET))

Session Classification: Working Group: QCD

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

Quark Matter and its Role for the Core Compositions of Neutron Stars

Thursday, 10 May 2018 15:10 (10 minutes)

The study of neutron stars establishes a direct connection between astronomy and nuclear and particle physics, allowing a better understanding of the behavior of matter under conditions that are difficult to reach in the laboratory. Massive neutron stars provide very important constraints on high-density nuclear matter and its associated Equation of State (EoS), which is still essentially unknown. Depending on neutron star mass and rotational frequency, gravity may compress the matter in the core regions of such objects up to more than ten times the density of ordinary atomic nuclei, thus providing a high-pressure environment in which numerous subatomic particle processes are likely expected to compete with each other and phase transitions to new states of matter, foremost quark matter, may occur. In this talk, I will provide a general discussion of the properties of quark matter and explore its role for the core composition of neutron stars. Different lines of research carried out by the Astrophysics group at the FCAG will be introduced.

Primary author: Dr ORSARIA, Milva Gabriela (Facultad de Ciencias Astronomicas y Geofisicas)

Presenter: Dr ORSARIA, Milva Gabriela (Facultad de Ciencias Astronomicas y Geofisicas)

Session Classification: Working Group: QCD

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

Relativistic nonlocal quark models for QCD. Hadron properties and phase transitions under extreme conditions of temperature, density and external magnetic fields

Thursday, 10 May 2018 14:00 (15 minutes)

We study the properties of hadrons and the structure of the QCD phase diagram in the framework of quark models that include nonlocal interactions. Effects of external magnetic fields are also analyzed. Model predictions are compared with experimental data and with the results obtained through lattice QCD calculations.

Primary author: Dr GOMEZ DUMM, Daniel (IFLP, CONICET - Universidad de La Plata, Argentina)

Presenter: Dr GOMEZ DUMM, Daniel (IFLP, CONICET - Universidad de La Plata, Argentina)

Session Classification: Short Communications

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

Time-dependent GL approach to the dynamics of inhomogeneous chiral condensates

Thursday, 10 May 2018 15:20 (10 minutes)

We study the dynamics of inhomogeneous scalar and pseudoscalar chiral order parameters within the framework of the time-dependent Ginzburg-Landau equations. We utilize a nonlocal chiral quark model to obtain the phase diagram of the model as function of temperature and baryon chemical potential and study the formation of metastable spatial domains of matter where the order parameters acquire a spatial modulation in the course their dynamical evolution. We found that, before reaching the expected equilibrium homogeneous state, both scalar and pseudoscalar chiral condensates go through long-lived metastable inhomogeneous structures.

Primary authors: CARLOMAGNO, Juan Pablo (IFLP-CONICET); KREIN, Gastao (UNESP)

Presenter: CARLOMAGNO, Juan Pablo (IFLP-CONICET)

Session Classification: Working Group: QCD

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

Hadron structure from string theory

Thursday, 10 May 2018 14:15 (15 minutes)

New results on the string theory dual description of deep inelastic scattering of charged leptons from hadrons are presented for strongly coupled gauge theories. These include: structure functions of glueballs, scalar and polarized vector mesons and polarized spin 1/2 hadrons. Also universal properties of string theory duals, extended Callan-Gross relations, properties of 1/Nc expansion, as well as comparison with lattice QCD results and phenomenology are discussed.

Primary author: SCHVELLINGER, Martin (Instituto de Física La Plata)

Presenter: SCHVELLINGER, Martin (Instituto de Física La Plata)

Session Classification: Short Communications

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

Thermodynamic properties of finite systems at zero chemical potential within pNJL model

Thursday, 10 May 2018 14:40 (10 minutes)

We study the thermodynamic properties of finite systems at zero chemical potential and finite temperature, in the frame of the Polyakov loop Nambu-Jona-Lasinio model for two light and one heavy quarks. Finite size effects are considered whithin the Multiple Reflection Expansion formalism. We analyze some thermodynamic quantities including the equation of state, the interaction measure, the speed of sound, the surface tension, and the curvature energy for different system sizes, and compare our results with lattice QCD data. We find that the system undergoes a smooth crossover for all sizes. Most of the thermodynamic quantities analyzed are sensitive to finite volume effects, specially for systems with radii below $\sim$ 10 fm, and for temperatures around the crossover one.

Primary authors: Dr GRUNFELD, Ana Gabriela (CONICET - CNEA); Prof. LUGONES, German (Centro de Ciencias Naturais e Humanas, Universidade Federal do ABC)

Presenter: Dr GRUNFELD, Ana Gabriela (CONICET - CNEA)

Session Classification: Working Group: QCD

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

Third family of compact stars within a nonlocal chiral quark model equation of state

Thursday, 10 May 2018 15:30 (10 minutes)

We suggest a class of hybrid compact star equations of state which support the existence of a third family of compact stars composed of a core of two-flavor
quark matter and a shell of hadronic matter described within a relativistic meanfield model with excluded nucleon volume.
The quark matter equation of state is based on a nonlocal covariant chiral quark model with vector meson and diquark condensate.
A twofold interpolation method is realized which implements both, the density dependence of a confining bag pressure at the onset of the hadron-to-quark matter transitiona as well as the stiffening of quark matter at higher densities by a density dependent vector meson coupling.
For three parametrizations of this class of hybrid equation of state the properties of corresponding compact star sequances are presented, including mass twins of neutron and hybrid stars at 2.00, 1.39 and 1.20 $M_\odot$, respectively and the compact hybrid star (third) families. It is demonstrated that this advanced description of hybrid satr matter allows to interpret GW170817 as a merger not only of two neutron stars but also of a neutron star with a hybrid star or of two hybrid stars. The latter two scenarios are in accordance with the constraints on compactness from GW170817 when a binary neutron star merger with a too stiff hadronic equation of state would be ruled out.

Primary authors: Dr GRUNFELD, Ana Gabriela (CONICET - CNEA); Prof. BLASCHKE, David (Institute for Theoretical Physics, University of Wroclaw, Poland. Bogoliubov Laboratory of Theoretical Physics, Joint Institute for Nuclear Research, Dubna, Russia.); Dr ALVAREZ CASTILLO, David (Bogoliubov Laboratory of Theoretical Physics, Joint Institute for Nuclear Research); Dr PAGURA, Valeria (Departamento de Fisica Teorica and IFIC, Centro Mixto Universidad de Valencia-CSIC)

Presenter: Dr GRUNFELD, Ana Gabriela (CONICET - CNEA)

Session Classification: Working Group: QCD

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

BSM Theory

Wednesday, 9 May 2018 10:00 (40 minutes)

Presenter: DA ROLD, Leandro (C)

Session Classification: Plenary Session

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

QCD Theory

Wednesday, 9 May 2018 10:40 (40 minutes)

Presenter: DE FLORIAN , Daniel (ICAS)

Session Classification: Plenary Session

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

Higgs Theory

Wednesday, 9 May 2018 11:20 (40 minutes)

Presenter: GERSDORFF, Gero (PUC-Rio)

Session Classification: Plenary Session

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

BSM: Experimental Status

Thursday, 10 May 2018 09:30 (40 minutes)

Presenter: WAHLBERG, Hernan Pablo (National University of La Plata (AR))

Session Classification: Plenary Session

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

Flavour Physics

Thursday, 10 May 2018 10:10 (40 minutes)

Presenter:　NASTEVA, Irina (Federal University of of Rio de Janeiro (BR))

Session Classification:　Plenary Session

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

Future of LHC

Friday, 11 May 2018 09:30 (40 minutes)

Presenter: DOVA, Maria Teresa (National University of La Plata (AR))

Session Classification: Plenary Session

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

Higgs: Experimental Status

Friday, 11 May 2018 10:10 (40 minutes)

Presenter: GALLI MERCADANTE, Pedro (UNESP - Universidade Estadual Paulista (BR))

Session Classification: Plenary Session

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

QCD: Experimental Status

Friday, 11 May 2018 11:20 (40 minutes)

Presenter:　MORAES, Arthur (CBPF - Brazilian Center for Physics Research (BR))

Session Classification:　Plenary Session

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

BSM: Experimental Status

Presenter: WAHLBERG, Hernan Pablo (National University of La Plata (AR))

Session Classification: Plenary Session

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

BSM: Experimental Status

Presenter: WAHLBERG, Hernan Pablo (National University of La Plata (AR))

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