Short talks on Saturday June 23rd				
Start	**End**	**Speaker**	**Title**	**Abstract**
10:00	10:10	**Bastián Diaz** (Federico Santa Maria Technical University)	**Vector Dark model in the fundamental representation of SU(2)**	This extension to the standard model considers new vector fields which enter in the same representation under the SM gauge symmetry than the Higgs doublet. The model contains four new vectors, in which one of them is neutral and candidate to be a dark matter particle. We constrain the model through EWPT, diphoton Higgs decay, and direct and collider dark matter searches.
10:12	10:22	**Martín Dionisio Arteaga Tupia** (Institute of physics – USP)	**Impact of Beyond the Standard Model Physics in the Detection of the Cosmic Neutrino Background**	We discuss the effect of Beyond the Standard Model charged current interactions on the detection of the Cosmic Neutrino Background by neutrino capture on tritium in a PTOLEMY-like detector. We show that the total capture rate can be substantially modified for Dirac neutrinos if scalar or tensor right-chiral currents, with strength consistent with current experimental bounds, are at play. We find that the total capture rate for Dirac neutrinos, ΓBSMD, can be between 0.3 to 2.2 of what is expected for Dirac neutrinos in the Standard Model, ΓSMD, so that it can be made as large as the rate expected for Majorana neutrinos with only Standard Model interactions. A non-negligible primordial abundance of right-handed neutrinos can only worsen the situation, increasing ΓBSMD by 30 to 90%. On the other hand, if a much lower total rate is measured than what is expected for ΓSMD, it may be a sign of new physics.
10:24	10:34	**Leonidas Augusto Fernandes do Prado** (Instituto de Física Teórica)	**Exploring the Minimal Composite Higgs Model in the Higgs Sector at the LHC using the ttH and ttHH production channels**	A Minimal Composite Higgs Model (MCHM), with fermions in the fundamental representation of SO(5) is taken as the starting hypothesis to study the impact of compositeness in the ttH and ttHH production processes at LHC. While non-resonant effects dominate the ttH channel, the pair production of vector-like fermions can be dominant in the ttHH channel leading to an enhancement in its production cross-section when compared to the Standard Model expectation. The search for this enhancement predicted by the MCHM is the main goal of this phenomenological and experimental work.
10:36	10:46	**Adriano Cherchiglia** (Universidade Federal do ABC)	**Muon g-2 in the 2HDM: maximum results and detailed phenomenology**	We present a comprehensive analysis of the muon magnetic moment aμ in the flavour-aligned two-Higgs doublet model (2HDM) and parameter constraints relevant for aμ. We employ a recent full two-loop computation of aμ and take into account experimental constraints from Higgs and flavour physics on the parameter space. Large aμ is possible for light pseudoscalar Higgs A with large Yukawa couplings to leptons, and it can be further increased by large A coupling to top quarks. We investigate in detail the maximum possible Yukawa couplings to leptons and quarks of a light A, finding values of around 50...100 (leptons) and O(0.5) (quarks). As a result we find that an overall maximum of aμ in the 2HDM of more than 45×10−10 is possible in a very small parameter region around M_A=20 GeV. The parameter regions in which the currently observed deviation can be explained are characterized.

10:48	10:58	**Carlos Yosep Bautista Choqque** (Instituto de Física Teórica)	**Folded Supersymmetry as a Neutral Natural Solution to the Hierarchy Problem**	The hierarchy problem has been a guide to constructing theories beyond the Standard Model (SM) in the recent past. Most of the theories address the issue by introducing new degrees of freedom (partners) charged under the SM color. It was expected that the production of these states at the LHC should be high enough to discover them. However, so far, no signal has been found. A framework of theories with "neutral naturalness" can accommodate this no-signal results by introducing uncolored partners which have suppressed cross sections at the LHC and, consequently, are difficult to detect. In this talk, after explaining the hierarchy problem, we explore a neutral natural version of Supersymmetry known as Folded Supersymmetry (F-SUSY), in which the top F-SUSY partners are neutral under the SM color but charged under a new hidden SU(3) gauge symmetry.
11:00	11:10	**Leidy Milena Leal Abril** (Universidad Pedagógica y Tecnológica de Colombia)	**Functional Methods in an Extension of the SM with Leptoquarks**	In spite of the successful predictions of the Standard Model (SM), some low-energy precision measurements have reported new anomalous signals. The anomalies recently observed in the semileptonic decays of the ratio $B^+ \to K^+\mu^+\mu^-$ to $B^+ \to K^+e^+e^-$ can be explained through particles called Leptoquarks. We consider an extension of the SM with a scalar Leptoquark that transforms as $(3, 1)_{-1/3}$ under the SM gauge group. We use functional methods to obtain the EFT low-energy couplings (Wilson coefficients). Also, some results of the extension and the possible restrictions of this model will be presented.
11:12	11:22	**Andrés Felipe Vásquez Tocora** (Instituto de Física Teórica)	**Sommerfeld Enhancement in the Double Higgs Boson Production by e^+e^- Annihilation**	We study the Sommerfeld effect in the double Higgs production in the scenario of e^+e^- colliders. The enhancement is discussed as being generated by a hidden sector coupled to the Higgs boson. Below and above threshold, enhancements are shown when we consider the process e^+e^- -> hh to be s-wave dominated. An analysis near threshold is of importance in the ILC project, which will operate up to the threshold energy \sqrt{s} = 250 GeV in the first stage. The results have been achieved by the use of computational tools like FeynArts, FormCalc, and LoopTools.
11:24	11:34	**Coffee break**		
11:34	11:44	**Fábio Köpp Nóbrega** (Universidade Federal do Rio Grande do Sul)	**A brief introduction to Neutron stars and Quark stars**	Neutron stars are the most compact objects in nature and are widely used in the study of dense matter physics. In this work we investigate the structure of these stars, described by the Tolman-Openheimer-Volkof equations, using Walecka's model which reproduces the features of the symmetric nuclear matter. We use the M.I.T model to describe the Strange Star. We obtain results for the mass-radius relation and compare our results with the actual pulsar data recently observed PSR J1614-2230 with a mass 1.97 ± 0.04 solar mass.
11:46	11:56	**Jesuel Marques Leal Junior** (Instituto de Física Teórica)	**QCD sum rules for the Δ isobar in neutron matter**	We study the properties of the Δ isobar in the symmetric and asymmetric nuclear matter using the QCD sum rules approach based on the energy dispersion relation. Allowing for different continuum thresholds for the polarization tensors with different dimensions, we find stable masses for the Δ in both the vacuum and the medium. Compared to the nucleon case, we find that the vector repulsion is smaller for the Δ while the scalar attraction is similar (75 MeV vector repulsion and 200 MeV scalar attraction in the symmetric matter). Also the isospin dependence of the quasiparticle energy, which mainly comes from the vector self energy, is quite weak. Phenomenological consequences of our results are discussed.

11:58	12:08	**Rafael Palota da Silva** (Universidade Federal de Pelotas)	**Diffractive double quarkonium production at the LHC**	In this paper we study the double quarkonium production in single and double diffractive processes considering the Resolved Pomeron model. Based on the nonrelativistic QCD (NRQCD) factorization formalism for the quarkonium production mechanism we estimate the rapidity and transverse momentum dependence of the cross section for the J/Psi-J/Psi and Upsilon-Upsilon production in diffractive processes at LHC energies. The contributions of the color-singlet and color-octet channels are estimated and predictions for the total cross sections in the kinematical regions of the LHC experiments are also presented. Our results demonstrate that the contribution of diffractive processes is not negligible and that its study can be useful to test the Resolved Pomeron model.
12:10	12:20	**Mateus Reinke Pelicer** (Universidade Federal de Santa Catarina)	**Analysis of the impact of higher-twist and absorptive corrections on the gluon distribution function**	The gluon distribution function is not well determined in the region of small-x and $Q^2 \sim 2$ GeV^2. Not only is there a huge disagreement between different PDF sets, some present a non-physical behavior. In this kinematic region, non-perturbative corrections must be taken into account. The aim of this work is to analyze the gluon distribution when higher-twist and absorptive corrections are taken into account in the DGLAP formalism. We have found that higher-twist corrections have no impact on the distributions, and preliminary results indicate a meaningful contribution when considering absorptive ones.
12:22	12:32	**Leonardo Barbosa** (Institute of physics – USP)	**Predictions for event-by-event flow harmonic distributions at RHIC**	The Quark Gluon Plasma (QGP) was discovered at RHIC and it has also been created at the LHC. The properties of the QGP are a result of the strong interactions. Knowing this, the QGP can be used as a way to investigate the fundamental theory of color interaction. Great part of the effort in the High Energy Physics community today is the search for a critical point that is believed to exist in the QCD phase diagram. In a near future (2019-2020) RHIC will run the Beam Energy Scan II in order to investigate the existence of this critical point. The standard theoretical description of the Quark Gluon Plasma production goes roughly by 3 stages: The initial conditions (IC), the hydrodynamical evolution and the hadronization. These initial conditions are still in need of a better understanding. In order to study the QGP near the critical point we must have a satisfactory model for these initial conditions. In this talk, I will present a way to measure anisotropy flow and show that it also gives us a good way to probe these initial conditions via event-by-event anisotropic flow distributions. I'll also talk about some models that fail or succeed (e.g. NeXus) in providing reasonable results for LHC energies. I will also make predictions for RHIC top energy.
12:34	12:44	**Pedro Augusto Rocha Ishida** (Institute of physics – USP)	**Analysis of Collective Flow in Heavy Ion Collisions**	The Quark Gluon Plasma (QGP) created in Heavy Ion Collisions holds much information about the fundamental theory of color interactions. The search for the critical point, believed to exist in the Quantum Chromodynamics (QCD) phase diagram, is one of the endeavors of high energy physics, and the Beam Energy Scan (BES) at RHIC was planned to investigate this region. The collective flow in particle distributions is one of the characteristics that can be related to the QGP. I will talk about the anisotropic flow measured in Heavy Ion Collisions and a fairly new method of analysis, the Principal Component Analysis.