Weyl and Dirac Semimetals as a Laboratory for High-Energy Physics

Report of Contributions

https://indico.lip.pt/e/1991

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

Chiral magnetic effect: current status and open problems

Wednesday 25 June 2025 09:35 (35 minutes)

Primary author: KHARZEEV, Dmitri (Stony Brook University and BNL)

Presenter: KHARZEEV, Dmitri (Stony Brook University and BNL)

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

TBA

Friday 27 June 2025 11:00 (35 minutes)

Primary author: CASTRO, Eduardo

Presenter: CASTRO, Eduardo

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

Non-equilibrium charge-vortex duality

Wednesday 25 June 2025 11:35 (35 minutes)

Primary author: SUROWKA, Piotr

Presenter: SUROWKA, Piotr

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

Effect of disorder on surface states of Weyl nodal loop semimetals

Friday 27 June 2025 11:35 (35 minutes)

Presenter: ARAUJO, Miguel

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

Disordered Three-Dimensional Weyl Electrons

Friday 27 June 2025 12:10 (35 minutes)

Presenter: PIRES, João

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

Exotic properties of strongly interacting matter under rotation

Friday 27 June 2025 09:35 (35 minutes)

Recent first-principles lattice simulations of SU(N) Yang-Mills theory in 3+1 dimensions have revealed that the gluon plasma exhibits several unexpected equilibrium properties in a rotating state: (i) a negative moment of inertia within a certain temperature range; (ii) the formation of a thermodynamically stable inhomogeneous mixed phase that does not align with the conventional Tolman–Ehrenfest relation in static gravitational backgrounds; and (iii) a rotation-induced enhancement of the critical deconfinement temperature. We briefly review these surprising numerical observations and argue that they may share a common origin rooted in enhancement of the gluonic coupling in a non-inertial rotating frame. We suggest that such phenomena may be probed experimentally in synthetic non-Abelian gauge fields engineered in condensed matter systems.

Presenter: CHERNODUB, Maxim (Institut Denis Poisson, CNRS, Tours, France)

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

Dirac Kondo effect under magnetic catalysis

Wednesday 25 June 2025 12:10 (35 minutes)

Primary author: HATTORI, Koichi

Presenter: HATTORI, Koichi

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

Wigner-Weyl calculus for non-Abelian gauge theory

Wednesday 25 June 2025 14:25 (35 minutes)

Primary author: ZUBKOV, Mikhail

Presenter: ZUBKOV, Mikhail

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

Non-renormalization of the fractional quantum Hall conductivity by interactions

Wednesday 25 June 2025 15:00 (35 minutes)

Primary author: SELCH, Maik

Presenter: SELCH, Maik

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

Experimental status of the condensed matter axion

Thursday 26 June 2025 09:00 (35 minutes)

Primary author: LIEBMAN, Olivia

Presenter: LIEBMAN, Olivia

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

Photonic axion insulators

Thursday 26 June 2025 11:00 (35 minutes)

Primary author: DEVESCOVI, Chiara

Presenter: DEVESCOVI, Chiara

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

Experimental challenges of topological insulators: from growth to axion electrodynamics

Thursday 26 June 2025 11:35 (35 minutes)

Primary author: ROSÁRIO, Carlos

Presenter: ROSÁRIO, Carlos

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

Axions and Superfluifity in Weyl semimetals

Thursday 26 June 2025 09:35 (35 minutes)

Primary author: MOTTOLA, Emil

Presenter: MOTTOLA, Emil

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

Exploring Axionic Physics with Weyl Semimetals

Thursday 26 June 2025 12:10 (35 minutes)

Primary author: CORTIJO, Alberto

Presenter: CORTIJO, Alberto

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

CFT in momentum space for parity-odd interactions and anomalies at finite density

Thursday 26 June 2025 14:25 (35 minutes)

Primary author: CORIANÒ, Claudio

Presenter: CORIANÒ, Claudio

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

Sum rules for Chiral, Conformal and Gravitational anomaly form factors

Thursday 26 June 2025 15:00 (35 minutes)

Primary author: MELLE, Dario

Presenter: MELLE, Dario

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

Vortical effects in chiral band structures

Friday 27 June 2025 14:25 (35 minutes)

Primary author: HOSUR, Pavan (University of Houston)

Presenter: HOSUR, Pavan (University of Houston)

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

Geometric Semimetals

Wednesday 25 June 2025 11:00 (35 minutes)

Primary author: PALUMBO, Giandomenico

Presenter: PALUMBO, Giandomenico

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

A new scale anomaly in Dirac matter

Friday 27 June 2025 09:00 (35 minutes)

Primary author: VOZMEDIANO, María (CSIC)

Presenter: VOZMEDIANO, María (CSIC)

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

1-form symmetry, Conductivity vs Resistivity & Operator lifetime in chiral MHD

Wednesday 25 June 2025 16:25 (35 minutes)

Primary author: POOVUTTIKUL, Napat

Presenter: POOVUTTIKUL, Napat

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

Real-time Chiral Magnetic Effect from Monte-Carlo simulations in imaginary time

Friday 27 June 2025 16:25 (35 minutes)

Primary author: BUIVIDOVICH, Pavel

Presenter: BUIVIDOVICH, Pavel

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

Chiral fermions on the lattice

Friday 27 June 2025 15:00 (35 minutes)

Primary author: SEN, Srimoyee

Presenter: SEN, Srimoyee

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

The quantum Newton‘s bucket

Thursday 26 June 2025 16:25 (35 minutes)

Primary author: TORRIERI, Giorgio (State University of Campinas (Unicamp),Brasil)

Presenter: TORRIERI, Giorgio (State University of Campinas (Unicamp),Brasil)

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

Emergence of Pseudo-Gauge Fields from Evolving Geometries in Graphene

Saturday 28 June 2025 09:35 (35 minutes)

Primary author: MORALES, Pablo

Presenter: MORALES, Pablo

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

Berry Curvature and Spin-One Color Superconductivity

Saturday 28 June 2025 10:10 (35 minutes)

Primary author: SOGABE, Noriyuki

Presenter: SOGABE, Noriyuki

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

Examining the Anomalous Nature of Chiral Effects in Thermodynamics

Saturday 28 June 2025 11:35 (35 minutes)

Primary author: LARUE, Rémy

Presenter: LARUE, Rémy

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

Nonlinear and nonperturbative transport in topological semimetals

Saturday 28 June 2025 12:10 (35 minutes)

Primary author: DANTAS, Renato

Presenter: DANTAS, Renato

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

Welcome message from the preseindet of the School of Sciences

Wednesday 25 June 2025 09:25 (10 minutes)

Primary author: Prof. GONZÁLEZ MÉIJOME, José Manuel (School of Sciences, University of Minho)

Presenter: Prof. GONZÁLEZ MÉIJOME, José Manuel (School of Sciences, University of Minho)