



THIRD BULLETIN

XXXV Annual Meeting of the Division of Particles and Fields

IMPORTANT DATES

Abstract submission and registration start date:

March 26, 2021

Abstract submission deadline: **May 1, 2021**

Registration deadline: **May 8, 2021**

ORGANIZING COMMITTEE

Iraís Bautista Guzmán
(CINVESTAV)

Marco A. Bedolla
Hernández (UNACH)

José F. Benitez Rubio
(chair, UNISON)

Karen S. Caballero Mora
(UNACH)

Arturo Fernández Téllez
(BUAP)

The Division of Particles and Fields of the Mexican Physical Society organizes an Annual Meeting (RADPyC). The main objective of this event is to encourage graduate students and young postdocs to present their research work on high energy physics. Additionally, recognized invited speakers will present some review talks on diverse hot topics in this field. This year the meeting will be an **ONLINE EVENT**, organized by Benemerita Universidad Autonoma de Puebla (BUAP), Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional (CINVESTAV), Universidad Autonoma de Chiapas (UNACH), and Universidad de Sonora (UNISON). The event will start on Tuesday, **May 11**, and will end on Thursday, May 13.

The program consists of invited and contributed talks, and a poster session in the following areas:

- Astroparticle physics and Cosmology
- Neutrinos and Dark Matter
- QCD and Hadron Physics
- Physics Beyond the Standard Model
- Instrumentation, computational and accelerators physics
- Electroweak and Flavor Physics
- Quantum Field Theory

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INVITED TALKS

- **Dr. Arturo Menchaca (IF-UNAM)**,
"Production of light nuclei in p-p collisions and
its relevance to the search for dark matter in
cosmic rays"
- **Dr. Mick Mulder (CERN)**,
"Rare decays and anomalies at LHCb: a potential
violation of lepton flavor universality"
- **Dr. Tanguy Pierog (KIT)**,
"When heavy ions meet cosmic rays: how the
QGP could solve the muon puzzle?"
- **Dr. Elena Santopinto (INFN-Genova)**,
"Recent advances and future perspectives about
tetraquarks/pentaquarks"
- **Dr. Christophe Royon (U. of Kansas)**
"The discovery of the odderon by the DO and
TOTEM collaborations"
- **Dr. Zhiqing Zhang (LAL-Orsay)**,
(theory perspective on the muon g-2)
- **Dr. Gustavo Medina Tanco (ICN-UNAM)**,
(space instrumentation)
- **Dr. James Olsen (Princeton)**,
(CMS recent results)

REGISTRATION

Registration open until May 8:

<https://indico.nucleares.unam.mx/event/1715>

LIVE transmission will available via the DPyC
Facebook page:

<https://www.facebook.com/DPyC.SMF>

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REGISTRATION FEE

The event fee is voluntary:

- Students: 200 MXN
- Postdocs and professors: 400 MXN

We encourage participants to pay the SMF
membership:

<https://www.smf.mx/requisitos-para-ser-socio>

Fees can be paid by bank transfer to the following
accounts:

Banco: BANAMEX

Número de cuenta: 1866151

Sucursal: 349

Referencia: RADPyC2021

Nombre: Sociedad Mexicana de Física, A.C.

CLABE: 002180034918661519

Banco: SANTANDER

Número de cuenta: 65506284898

Referencia: RADPyC2021

Nombre: Sociedad Mexicana de Física, A.C.

CLABE: 014180655062848985

**GENERAL ASSEMBLY OF THE DIVISION OF
PARTICLES AND FIELDS**

May 12 afternoon session (Not a Public Event)

An order of the day will be released soon with at
least the following items in the agenda:

- Medal of the Division of Particles and Fields
- Vice President Voting Results
- Elected President Takes Protest
- Organization of the Mexican School of
Particles and Fields

We encourage all participants to continue with
the safety precautions against COVID-19.

XXXV ANNUAL MEETING DPYC-SMF

Tuesday 11 May 2021

Openning (09:00-09:30)

"When heavy ions meet cosmic rays : how the QGP could solve the muon puzzle ?" (09:30-10:10)

- Presenters: Dr. PIEROG, Tanguy

Astroparticle physics and Cosmology (10:10-11:01)

- Conveners: Dr. Carraminana, Alberto

time	[id] title	presenter
10:10	[33] Investigation of the Proton plus Helium cosmic ray spectrum in the 10 TeV - 126 TeV energy region with HAWC	Dr. ARTEAGA VELAZQUEZ, Juan Carlos
10:27	[36] The All-particle cosmic-ray energy spectrum measured with HAWC	Mr. MORALES SOTO, Jorge Antonio
10:44	[16] Universe and Holography	Dr. RODRIGUEZ-BENITES, Carlos

Tribute to Dr. Salvador Carrillo (11:01-11:11)

- Presenters: Dr. OROPEZA BARRERA, Cristina

coffe break: coffe break (11:11-11:31)

"Production of light nuclei in p-p collisions and its relevance to the search for dark matter in cosmic rays" (11:31-12:11)

- Presenters: Dr. MENCHACA-ROCHA, Arturo

Neutrinos and Dark Matter (12:11-13:02)

- Conveners: Dr. Aguilar-Arevalo, Alexis

time	[id] title	presenter
12:11	[34] Spin-one dark matter and gamma ray signals from the galactic center	Ms. HERNÁNDEZ, Haydee
12:28	[37] Neutrino Mass Generation Models	Ms. MORALES, América
12:45	[3] Neutrino-electron scattering radiative corrections in short baseline experiments	MORENO GRANADOS, Guadalupe

Quantum Field Theory (14:35-15:43)

- Conveners: Dr. Ramos-Sanchez, Saul

time	[id] title	presenter
14:35	[38] Contributions to $\$ZZV^{\ast}\$$ ($\$V=\gamma,Z,\$$) couplings from $\$CP\$$ violating flavor changing couplings	Mr. HERNÁNDEZ JUÁREZ, Alan Ignacio

14:52	[19] Flavourful Axion and the Peccei-Quinn Symmetry	Mr. NELLEN MONDRAGÓN, Stefan Daniel
15:09	[15] The structure of cosmic strings for a $U(1)$ gauge field related to the conservation of the baryon-number minus lepton-number.	Mr. MUÑOZ-VITELLY, Victor
15:26	[32] The 3d $O(4)$ model and the QCD phase diagram in the chiral limit	Mr. LÓPEZ-CONTRERAS, Edgar

Posters (16:00-18:00)

[id]	title	presenter	board
[28]	"Quark and Gluon Propagation in Two-Colour Quantum Chromodynamics at High Density"	Dr. BOZ, Tamer	
[24]	Masa de Mesones y Bariones : un tratamiento unificado	Mr. PAREDES TORRES, Gustavo	
[26]	Phenomenological studies in the 2HDM and SM using Madgraph5	SICAIROS PÁEZ, SERGIO LUIS	
[20]	Scalar and gauge sectors in the 3-Higgs Doublet Model under the S_3 -symmetry	Ms. PÉREZ MARTÍNEZ, Adriana	
[21]	Anomalous magnetic and chromomagnetic moment	Mr. TORRES ROJAS, Luis Raúl	
[22]	Design of the TEPX luminometer for the CMS experiment at the HL-LHC	Mr. ENCINAS ACOSTA, Hedwin Aaron	
[42]	Measurement of the charge asymmetry in highly boosted top-quark pair production in pp collision data collected by the CMS experiment	Mr. BECERRIL, Hugo	
[40]	Flavor-changing decay $h \rightarrow \tau \mu$ at super hadron colliders	Dr. GAITAN, Ricardo	
[41]	Construction of a non-perturbative fermion-photon vertex in Quantum Electrodynamics using the Transverse Takahashi Identities	MORALES TREJO, María Guadalupe	
[4]	A Study of sub-keV Ionization Efficiency for Nuclear Recoils in Pure Crystals	Mr. SARKIS MOBARAK, youssef	
[7]	Semi-vórtices: Una nueva perspectiva de la transición BKT para el modelo XY bidimensional	GÓMEZ, Brandon	
[9]	pp and np diffraction scattering of hadrons, and scaling at asymptotic energies	Mrs. ROBLES JACOBO, Cristal	
[8]	The Schwinger model at finite temperature and in the delta-regime	NIETO CASTELLANOS, Jaime Fabián	
[13]	ALICE-FDD Detector Control System for LHC Run-3	Mr. MEJIA CAMACHO, Juan Manuel Dr. CABANILLAS NORIS, Juan Carlos	
[10]	Chiral Symmetry Breaking and Restoration in the contact interaction model with Electric and Magnetic fields	Dr. AHMAD, Aftab	
[12]	estudio de las fluctuaciones de momento y temperatura para sistemas pequeños en el SPM a energías del LHC	Mr. FIERRO ROJAS, Pablo	
[35]	Dark matter and neutrinos in Left-Right Mirror Model with SZ_2 symmetry.	Dr. MONTES DE OCA YEMHA, Jose Halim	

Wednesday 12 May 2021

"Recent advances and future perspectives about tetraquarks/pentaquarks" (09:00-09:40)

- Presenters: Dr. SANTOPINTO, Elena

QCD and Hadron Physics (09:40-10:31)

- Conveners: Dr. Raya, Alfredo

time	[id] title	presenter
09:40	[31] Measurement of multiparton interactions through forward-backward multiplicity correlations in jets.	Mr. DOMINGUEZ ROSAS, Edgar
09:57	[23] Electromagnetic meson form factors in a Poincaré covariant Bethe-Salpeter approach	Dr. MIRAMONTES, Ángel
10:14	[39] Internal structure of pseudoscalar mesons: An algebraic model and its implications	Ms. HIGUERA ANGULO, Isela Melany

The discovery of the odderon by the D0 and TOTEM collaborations (10:31-11:11)

- Presenters: Prof. ROYON, Christophe

Tribute to Dr. Arnulfo Zepeda (11:11-11:21)

- Presenters: Dr. ARTEAGA VELAZQUEZ, Juan Carlos

coffe break: coffe break (11:21-11:41)

(Recent CMS results) (11:41-12:21)

- Presenters: OLSEN, Jim

Electroweak & Flavor Physics (12:21-13:12)

- Conveners: Prof. De La Cruz Burelo, Eduard

time	[id] title	presenter
12:21	[5] Experimental status of CP Violation in Bs mixing.	MEJIA, Jhovanny
12:38	[25] A fully differential SMEFT analysis of the golden channel using the Method of Moments	Mr. OCHOA-VALERIANO, Oscar
12:55	[1] Search for tau to lepton + invisible decays with the Belle II detector at the SuperKEKB electron-positron collider	Mr. DE YTA HERNÁNDEZ, Alejandro

Lunch (13:12-14:30)

(space instrumentation) (14:30-15:15)

- Presenters: MEDINA, Gustavo

Instrumentation, computational and accelerators physics (15:15-16:06)

time	[id] title	presenter
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15:15	[30] Detection efficiency of the X-ARAPUCA	AYALA TORRES, Marco Alberto
15:32	[17] Detecting reactor antineutrinos with a liquid argon bubble chamber	Dr. FLORES, Luis
15:49	[29] Using machine learning tools in amplitude analysis	Mr. RABADAN TREJO, Raul Iraq

Coffee break (16:06-16:30)

GENERAL ASSEMBLY OF THE DIVISION OF PARTICLES AND FIELDS (16:30-18:30)

Thursday 13 May 2021

"The First Measurement of the Muon Anomalous Magnetic Moment from the Fermilab Muon g-2 Collaboration." (09:00-09:40)

- Presenters: Dr. TWESLEY-BOOTH, Alec

(muon g-2 theory perspective) (09:40-10:20)

- Presenters: ZHANG, Zhiqing

Coffee break (10:20-10:40)

Physics Beyond Standard Model (10:40-11:31)

- Conveners: Dr. Roig, Pablo

time	[id] title	presenter
10:40	[2] New τ -based evaluation of the hadronic contribution to the vacuum polarization piece of the muon anomalous magnetic moment	Mr. MIRANDA, Jesús
10:57	[6] Dyson-Schwinger equations and the muon g-2	Dr. RAYA, Khepani
11:14	[43] Opportunities for exotic signals at the LHeC within the 2HDM-III	Dr. ROSADO NAVARRO, Sebastián

"Rare decays and anomalies at LHCb: a potential violation of lepton flavor universality" (11:31-12:11)

- Presenters: MULDER, Mick

Closing (12:11-13:11)

time	[id] title	presenter
12:11	[45] Best posters award	
12:21	[46] Closing remarks	