

# **31st Annual Meeting of the Division of Particles and Fields of the Mexican Physical Society (AMDPF 2017)**

Journal of Physics: Conference Series Volume 912

Mexico City, Mexico  
24 - 26 May 2017

## **Editors:**

**I. Bautista  
E. de la Cruz Burelo  
A. Fernandez-Tellez**

**G. Lopez-Castro  
M. Rodriguez-Cahuantzi  
P. Roig**

ISBN: 978-1-5108-5064-4  
ISSN: 1742-6588

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2017) by the Institute of Physics  
All rights reserved. The material featured in this book is subject to  
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact the Institute of Physics  
at the address below.

Institute of Physics  
Dirac House, Temple Back  
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481  
Fax: 44 1 17 920 0979

[techtracking@iop.org](mailto:techtracking@iop.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# Table of contents

## Volume 912

**31st Annual Meeting of the Division of Particles and Fields (DPyC) of the Mexican Physical Society**

**24–26 May 2017, Mexico City, Mexico**

**Accepted papers received: 12 October 2017**

**Published online: 28 October 2017**

### Preface

011001

OPEN ACCESS

[31st Annual Meeting of the Division of Particles and Fields \(DPyC\) of the Mexican Physical Society](#)

I. Bautista, E. de la Cruz Burelo, A. Fernández-Téllez, G. López-Castro, M. Rodríguez-Cahuantzi and P. Roig

011002

OPEN ACCESS

[Committees](#)

011003

OPEN ACCESS

[Acknowledgements](#)

011004

OPEN ACCESS

[Participants](#)

011005

OPEN ACCESS

[Peer review statement](#)

## **Invited and contributed talks**

012001

OPEN ACCESS

[Tau magnetic moment](#)

G. A. González-Sprinberg and J. Vidal.....1

012002

OPEN ACCESS

[Study of five-body leptonic decays of tau at Belle experiment](#)

Junya Sasaki and Belle Collaboration.....13

012003

OPEN ACCESS

[Hadronic tau decays and the strong coupling](#)

Diogo Boito, Maarten Golterman, Kim Maltman and Santiago Peris.....23

012004

OPEN ACCESS

[Two- and three-meson decay modes of the  \$\tau\$ -lepton in the Monte Carlo generator TAUOLA](#)

Olga Shekhovtsova.....35

012005

OPEN ACCESS

[Recent upgrades and results from the CMS experiment](#)

J A Murillo Quijada on behalf of the CMS collaboration.....45

012006

OPEN ACCESS

[Prospects for measurement of  \$R\(D\)\$  and  \$R\(D^\*\)\$  in Belle II.](#)

Jorge Martínez-Ortega.....59

012007  
OPEN ACCESS  
[The  \$\tau^- \rightarrow \eta^{\(0\)} \pi^- \nu\_\tau \gamma\$  decays as backgrounds in the search for second class currents](#)

Adolfo Guevara.....65

012008  
OPEN ACCESS  
[Forward Physics and the glue at small  \$x\$](#)

Martin Hentschinski.....75

012009  
OPEN ACCESS  
[Partial restoration of chiral symmetry in cold nuclear matter: the  \$\phi\$ -meson case](#)

J J Cobos-Martínez, K. Tsushima, G. Krein and A. W. Thomas.....90

012010  
OPEN ACCESS  
[On the iterative solution of the gap equation in the Nambu-Jona-Lasinio model](#)

A Martinez and A Raya.....100

012011  
OPEN ACCESS  
[On flavor symmetries of phenomenologically viable string compactifications](#)

Saúl Ramos-Sánchez.....107

012012  
OPEN ACCESS  
[Helicity Amplitudes for production of massive gravitino/goldstino](#)

Bryan O. Larios.....119

012013  
OPEN ACCESS  
[QED and QCD self-energy corrections through the loop-tree duality](#)

N. Selomir Ramírez-Uribe, Roger J. Hernández-Pinto and Germán Rodrigo.....127

012014  
OPEN ACCESS  
[Feynman's path integral seen as a Henstock integral](#)

M. Guadalupe Morales and Ricardo Gaitán.....136

012015  
OPEN ACCESS  
[Operation and performance of the CMS Resistive Plate Chambers during LHC run II](#)

Jan Eysermans, María Isabel Pedraza Morales on behalf of the CMS Collaboration.....146

012016  
OPEN ACCESS  
[MEXnICA, Mexican group in the MPD-NICA experiment at JINR](#)

M. Rodríguez Cahuantzi for the MEXnICA group.....151

012017  
OPEN ACCESS  
[Search for Dark Matter in the beam-dump of a proton beam with MiniBooNE](#)

Alexis A. Aguilar-Arevalo for the MiniBooNE-DM Collaboration.....158

012018  
OPEN ACCESS  
[The detection of gravitational waves](#)

Juan Carlos Degollado.....163

012019  
OPEN ACCESS  
[New sources of CP violation](#)

A. Moyotl.....173

012020  
OPEN ACCESS  
[G-parity breaking contributions in  \$\tau^- \rightarrow \eta^{\(0\)} \pi^- \nu\_\tau\$  decays induced at one loop level by the anomalous  \$\gamma\gamma\eta^{\(0\)}\$  vertices](#)

G. Hernández-Tomé.....183

012021

OPEN ACCESS

[Lepton flavor changing Higgs boson decays in some extensions of the Standard Model](#)

S. Chamorro-Solano, A. Moyotl and M.A. Perez.....189

012022

OPEN ACCESS

[Unitarity and stability conditions in a 4-Higgs doublet model with an  \$S\_3\$ -family symmetry](#)

C Espinoza, E A Garcés, M Mondragón and H Reyes-González.....194

012023

OPEN ACCESS

[The ALICE experiment upgrades for LHC Run 3 and beyond: contributions from mexican groups](#)

L. Valencia Palomo.....203

012024

OPEN ACCESS

[Topology in the 2d Heisenberg Model under Gradient Flow](#)

I O Sandoval, W Bietenholz, P de Forcrand, U Gerber and H Mejía-Díaz.....211

012025

OPEN ACCESS

[Majorana versus Dirac neutrino in  \$\nu — e\$  scattering process and its possible applications](#)

J Barranco, D Delepine, M Napsuciale and A Yebra.....221

012026

OPEN ACCESS

[Two sum rules involving leading vector form factors in hyperon semileptonic decays](#)

Flores-Mendieta Rubén and Padrón-Stevens Roberto.....226

012027  
OPEN ACCESS  
[Contribution of sea quarks to the electromagnetic decay of decuplet baryons](#)

Gustavo Guerrero-Navarro and Roelof Bijker....236

012028  
OPEN ACCESS  
[Use of a non-relativistic basis for describing the low energy meson spectrum](#)

D. A. Amor-Quiroz, T. Yepez-Martinez, P. O. Hess and O. Civitarese.....243

## Posters

012029  
OPEN ACCESS  
[Kähler potential of heterotic orbifolds with multiple Kähler moduli](#)

Yessenia Olguín-Trejo and Saúl Ramos-Sánchez.....253

012030  
OPEN ACCESS  
[Searching for heavy Majorana neutrinos in  \$\tau^- \rightarrow \pi^+ \mu^- \mu^- \nu\_\tau\$  at Belle II](#)

D. Rodriguez Perez, P.L.M. Podesta Lerma and Isabel Dominguez Jimenez.....259

012031  
OPEN ACCESS  
[Potential of CCDs for the study of sterile neutrino oscillations via Coherent Neutrino-Nucleus Elastic Scattering](#)

Marisol Chávez-Estrada and Alexis A. Aguilar-Arevalo.....264

012032  
OPEN ACCESS  
[Higgs decay mediated by top-quark with flavor-changing neutral scalar interactions](#)

J. A. Orduz-Ducuara.....269

012033

OPEN ACCESS

[Minimal supersymmetric B – L extension of the standard model, heavy  \$H\$  and light  \$h\$  Higgs boson production and decay at future  \$e^+ e^-\$  linear colliders](#)

F Ramírez-Sánchez, A Gutierrez-Rodríguez and M A Hernández-Ruiz.....274

012034

OPEN ACCESS

[Invariant mass reconstruction of the  \$\eta\$  meson in the decay channel  \$\pi^+ \pi^- \pi^0\$  with the REDTOP experiment](#)

S. D. Escobar Martínez, B. Fabela Enríquez, M. I. Pedraza Morales on behalf of the REDTOP collaboration.....279

012035

OPEN ACCESS

[Design, construction and characterization of a three channels detector of cosmic rays](#)

Julian Félix, Oscar Moreno, Everardo Granados and Luis Arceo.....284

012036

OPEN ACCESS

[Cu Hybrid 4 Channel Cosmic Ray Detector](#)

F. J. Rosas Torres, M. A. Hernández Morquecho, L. Arceo and J. Félix.....289

012037

OPEN ACCESS

[Design and construction of a uniform magnetic field generator for a 32 channel cosmic ray detector](#)

K N Herrera-Guzman, R A Gutierrez-Sanchez, J Felix, L J Arceo and C Araujo.....294

012038

OPEN ACCESS

[Status Report on the R&D of a 5 T/m Normal Conducting Quadrupole Magnet for the 10-MeV Beam Line of the Electron Linac of the Mexican Particle Accelerator Community](#)

D Chavez, G H I Maury, M Napsuciale, C B Ortiz, J Peña, C Galvan-Duarte, C A Valerio and A I Sattarov.....299

012039

OPEN ACCESS

[Electromagnetic Design of a Radiofrequency Cavity](#)

G.R Montoya Soto, Carlos Duarte Galvan, Ildefonso Leon Monzon, Pedro Luis manuel Podesta Lerma and C.A Valerio-Lizarraga.....304

012040

OPEN ACCESS

[Decay of a pseudoscalar into two photons](#)

J. I. Aranda, E. Cruz-Albaro, D. Espinosa-Gómez, J. Montaño, F. Ramírez-Zavaleta and E. S. Tututi.....310

012041

OPEN ACCESS

[Decays  \$\Phi^P \rightarrow \gamma Z, ZZ\$  in the context of the Littlest Higgs Model](#)

J. I. Aranda, E. Cruz-Albaro, F. Ramírez-Zavaleta, J. Montaño and E. S. Tututi.....315

012042

OPEN ACCESS

[Detecting physics beyond the Standard Model with the REDTOP experiment](#)

D González, D León, B Fabela and M I Pedraza.....320

012043

OPEN ACCESS

[Global extraction of the parton-to-kaon fragmentation functions at NLO in QCD](#)

R. J. Hernández-Pinto, M. Epele, D. de Florian, R. Sassot and M. Stratmann.....326

012044

OPEN ACCESS

[Chromomagnetic and chromoelectric dipole moments in the 4GTHDM](#)

A. Hernández-Juárez, G. Tavares and A. Moyotl.....332

012045

OPEN ACCESS

[On a Three-Channel Cosmic Ray Detector based on Aluminum Blocks](#)

L Arceo and J Félix.....337

012046

OPEN ACCESS

[Simulation of a stripline beam position monitor of a single electrode for educational purposes](#)

F. Pérez-Suárez and H. Maury-Cuna.....342

012047

OPEN ACCESS

[Scalar dark matter in inert doublet model with scalar singlet](#)

L. G. Cabral-Rosetti, R. Gaitán, J.H. Montes de Oca, R. Osorio Galicia and E. A. Garcés.....347

012048

OPEN ACCESS

[Conjecture about the 2-Flavour QCD Phase Diagram](#)

M A Nava Blanco, W Bietenholz and A Fernández Téllez.....353

012049

OPEN ACCESS

[Study of atmospheric Showers Simulations, for Low Energies using Trasgos](#)

Alejandra Parra, Oscar Martínez, Humberto Salazar, Juan A. Garzón and Alma Morales.....358

012050

OPEN ACCESS

[Design, Construction, Test, Operation and Simulation of a Four Channel Cosmic Ray Detector](#)

A. Martínez and J. Félix.....363