



**División de Partículas y Campos
Sociedad Mexicana de Física**



Summary and Acknowledgments

XXXVI Reunión Anual

September 08-10 , 2022

<http://indico.nucleares.unam.mx/e/RADPyC2022>

Participants

115 registered participants

Students: ~27%

Prof./Dr.: ~73%

Daily participation:

~30-40 connected in zoom per session

~5 via Facebook (~100 views)



XXXVI Reunión Anual de la División de Partículas y Campos

8-10 September 2022
Virtual
Mexico/General timezone

XXXVI Annual Meeting of the Division of Particles and Fields

- Overview
- Call for Abstracts
- [View my Abstracts](#)
- [Submit Abstract](#)
- Timetable
- Speaker List

Participant List

Number of participants: 115

name	institution	position	city	country/region
Dr. AGUILAR-AREVALO, Alexis	Instituto de Ciencias Nucleares,		CDMX	Mexico

Talks and Posters

- Total of 51 presentations:

- 10 invited talks
- 34 contributed talks
- 7 poster presentations



Invited talks:

- Female: 6 (60%)
- Male: 4 (40%)

Contributed talks and posters

- Female: 9 (~22%)
- Male: 35 (~78%)

Participant:s

- Female: 25 (~22%)
- Male: 90 (~78%)

Exclusive Photo-production of J/Ψ and $\Psi(2s)$ as a tool to explore the transition to high and saturated gluon densities at the LHC.

Dr. Martin Hentschinski & Marco Antonio Alcaraz Paredo
 martin.hentschinski@udlap.mx, marco.alcaraz@udlap.mx
 Department of Actuarial Science, Physics and Mathematics - Universidad de las Américas Puebla
 XXXVI Annual Meeting of the Division of Particles and Fields



SpaceMath:

Una paquetería de Mathematica para la búsqueda del espacio de parámetros más allá del Modelo Estándar

- Desarrolladores: M. A. Arroyo Ureña
 T. A. Valencia Pérez
 Colaboradores: M. Mondragón Ceballos
 R. Gaitán

Invited speakers and session conveners

INVITED SPEAKERS:

- **Ana Avilez-López (BUAP)**
- **Minerba Betancourt (FERMILAB)**
- **Marco Cirelli, LPTHE (CNRS and Sorbonne University, Paris)**
- **Catalina Espinoza, Conacyt (IFUNAM)**
- **Melina Gomez-Bock**
- **Guillermo Gomez-Ceballos (MIT)**
- **Jaime Hernández Sánchez (BUAP)**
- **Mike Lamont (CERN)**
- **JeongEun Lee (Seoul National University)**
- **Ivonne Maldonado (Join Institute of Nuclear Research, Dubna)**

SESSION CONVENER:

- **Dra. Isabel Pedraza (BUAP)**
- **Dr. Alfredo Castañeda (UNISON)**
- **Dra. Ana Avilez (BUAP)**
- **Dr. Carlos Vaquera (UG)**
- **Dr. Félix González (BUAP)**
- **Dra. Luz Adriana Cordero Cid (BUAP)**
- **Dra. Estela Garcés (UNAM)**
- **Dr. Cecilia Uribe (BUAP)**
- **Dr. Halim Montes de Oca (UNAM)**
- **Dra. Alba Carrillo (UAEH)**
- **Dr. Carlos Honorato (BUAP)**
- **Dr. Javier Murillo (UNISON)**
- **Dr. Juan Barranco (UG)**
- **Dr. Selim Gómez (UAEH)**

Awards

DPyC 2022 medal

Prof. ROYON, Christophe



Poster Awards

Best Poster

- Marco Antonio Alcázar (UDLAP) **Exclusive Photo-production of J/Ψ and $\Psi(2s)$ as a tool to explore the transition to high and saturated gluon densities at the LHC**

Honorable Mention

- Alejandra Cervantes (BUAP) **Análisis de la dispersión nuclear de Dark matter WIMP-nucleón**

Exclusive Photo-production of J/Ψ and $\Psi(2s)$ as a tool to explore the transition to high and saturated gluon densities at the LHC.

Dr. Martin Hentschinski & Marco Antonio Alcázar Peredo
martin.hentschinski@udlap.mx, marco.alcazar@udlap.mx
Division of Actual Science, Physics and Mathematics - Universidad de las Américas Puebla
XXXVI Annual Meeting of the Division of Particles and Fields



Our Investigation

- We study the energy dependence of the cross-sections for exclusive photo-production of vector mesons J/Ψ and $\Psi(2s)$ in order to constrain the gluon density at the transition to high and saturated gluon densities.
- Our goal is to test two different models: the Color-Flavor-Locked (CFL) and the Color-Flavor-Singlet (CFS) models.
- In both models, non-linear effects are introduced through rescaling of the leading order QCD amplitudes, where the BFKL kernel includes QCD K_T -resummation in the description.
- Differences between linear and non-linear approaches are the clear focus of the study of $\Psi(2s)$ and J/Ψ photo-production cross-sections.
- We compare linear and non-linear approaches in the case of transverse QCD effects at small relative energy.

Exclusive Photo-Production of Vector Mesons

- The exclusive photo-production of vector mesons J/Ψ and $\Psi(2s)$ is produced by the interaction between a photon and a proton, leading to the production of a vector meson and a proton.
- Figure 1: An illustration of the photo-production of vector mesons J/Ψ and $\Psi(2s)$ in the forward region, showing the interaction between a photon and a proton, leading to the production of a vector meson and a proton.
- Figure 2: An illustration of the photo-production of vector mesons J/Ψ and $\Psi(2s)$ in the forward region, showing the interaction between a photon and a proton, leading to the production of a vector meson and a proton.

Results

Figure 3: The energy dependence of the J/Ψ , $\Psi(2s)$ and the ratio of $\Psi(2s)$ and J/Ψ for the photo-production cross-sections as predicted by the CFL and the CFS Model for gluon densities representing the QCD-KT model.

Objectives

- Determine the photo-production cross-sections and the LHC.
- Determine the photo-production cross-sections and the LHC.

Conclusions

- Our study shows that the transition to high and saturated gluon densities is observed in the energy dependence of the cross-sections for J/Ψ and $\Psi(2s)$ production.
- We find that the ratio of $\Psi(2s)$ and J/Ψ cross-sections is a sensitive probe of the gluon density at the transition to high and saturated gluon densities.
- We conclude that the transition to high and saturated gluon densities is observed in the energy dependence of the cross-sections for J/Ψ and $\Psi(2s)$ production.

References

1. M. Hentschinski, M. A. Alcázar Peredo, *Exclusive Photo-production of J/Ψ and $\Psi(2s)$ as a tool to explore the transition to high and saturated gluon densities at the LHC*, *Phys. Rev. D* **104**, 034011 (2021).
2. M. Hentschinski, M. A. Alcázar Peredo, *Exclusive Photo-production of J/Ψ and $\Psi(2s)$ as a tool to explore the transition to high and saturated gluon densities at the LHC*, *Phys. Rev. D* **104**, 034011 (2021).
3. M. Hentschinski, M. A. Alcázar Peredo, *Exclusive Photo-production of J/Ψ and $\Psi(2s)$ as a tool to explore the transition to high and saturated gluon densities at the LHC*, *Phys. Rev. D* **104**, 034011 (2021).

Reunión Anual de Partículas y Campos
ANÁLISIS DE LA DISPERSIÓN NUCLEAR DE MATERIA OSCURA WIMP-NUCLEÓN

Objetivos

- Analizar la dispersión nuclear de la materia oscura WIMP-nucleón.
- Estimar la sección eficaz de dispersión nuclear de la materia oscura WIMP-nucleón.
- Comparar los resultados con los experimentos de dispersión nuclear de la materia oscura WIMP-nucleón.

Resultados

Figure 1: Nuclear dispersion of dark matter WIMP-nucleon. The plot shows the nuclear dispersion of dark matter WIMP-nucleon as a function of the nuclear mass number A and the relative energy of the incoming WIMP.

Figure 2: Nuclear dispersion of dark matter WIMP-nucleon. The plot shows the nuclear dispersion of dark matter WIMP-nucleon as a function of the nuclear mass number A and the relative energy of the incoming WIMP.

Conclusiones

- La dispersión nuclear de la materia oscura WIMP-nucleón es un fenómeno importante que debe ser considerado en los cálculos de la sección eficaz de dispersión nuclear de la materia oscura WIMP-nucleón.
- Los resultados obtenidos en este estudio muestran que la dispersión nuclear de la materia oscura WIMP-nucleón puede ser utilizada para mejorar los límites de la sección eficaz de dispersión nuclear de la materia oscura WIMP-nucleón.
- Este estudio proporciona una herramienta útil para el análisis de los datos de los experimentos de dispersión nuclear de la materia oscura WIMP-nucleón.

Referencias

1. J. Lewin, *Dark Matter: A Comprehensive Review*, *Phys. Rept.* **425**, 1-65 (2002).
2. G. Bertone, *Dark Matter: A Comprehensive Review*, *Phys. Rept.* **425**, 1-65 (2002).
3. M. H. Ahn, *Dark Matter: A Comprehensive Review*, *Phys. Rept.* **425**, 1-65 (2002).

Congratulations!

XXXVI Reunión Anual / División de Partículas y Campos / SMF

Election committees

- **DPyC 2022 Medal election committee**
- **Best-poster selection committee**

Thanks for the hard work!

Technical, Administrative, Design

Jesús Avalos, Marco Bedolla

**Zoom, Recording, Live Stream,
Facebook, Youtube**

Patricia Carranza Díaz, Alfonso Alcocer Acevedo

Registration, Fees/Invoices

Lukas Nellen (ICN-UNAM)

Alberto Sánchez (CINVESTAV)

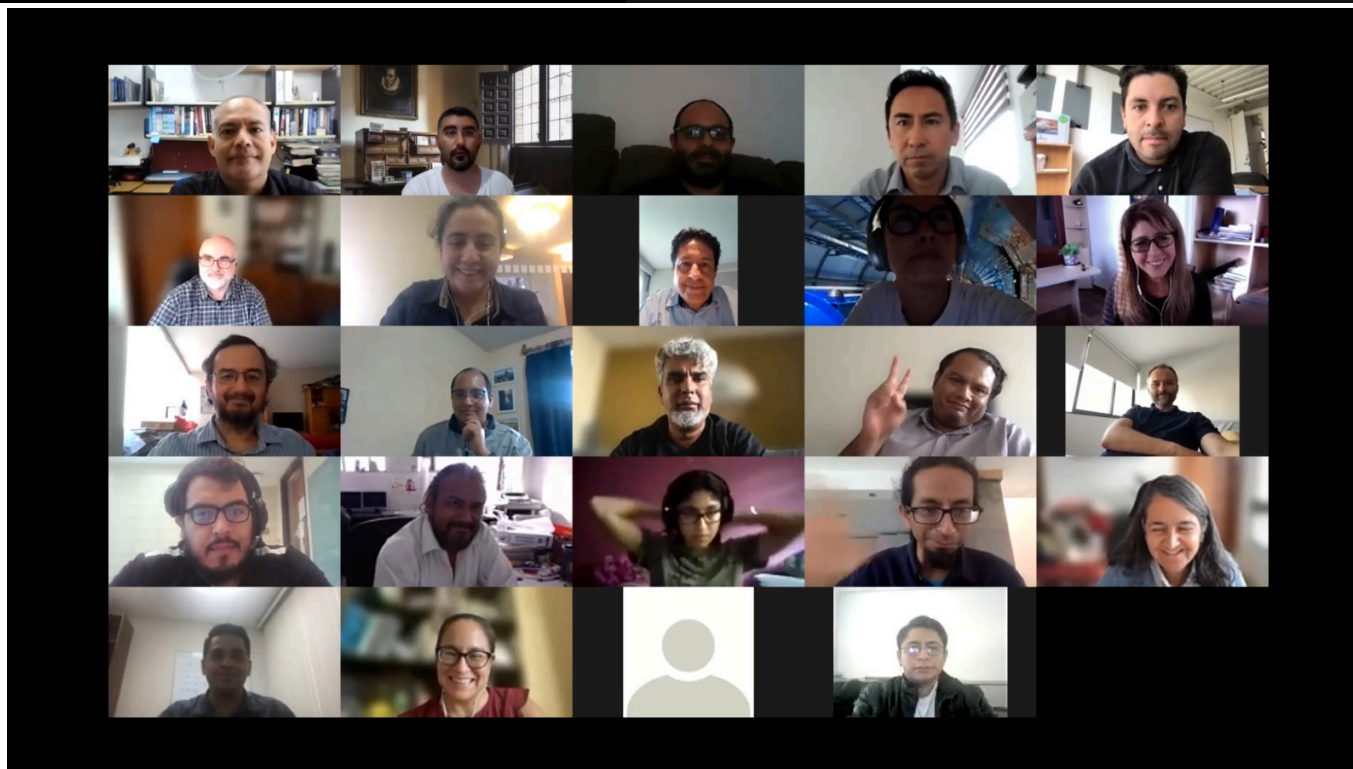
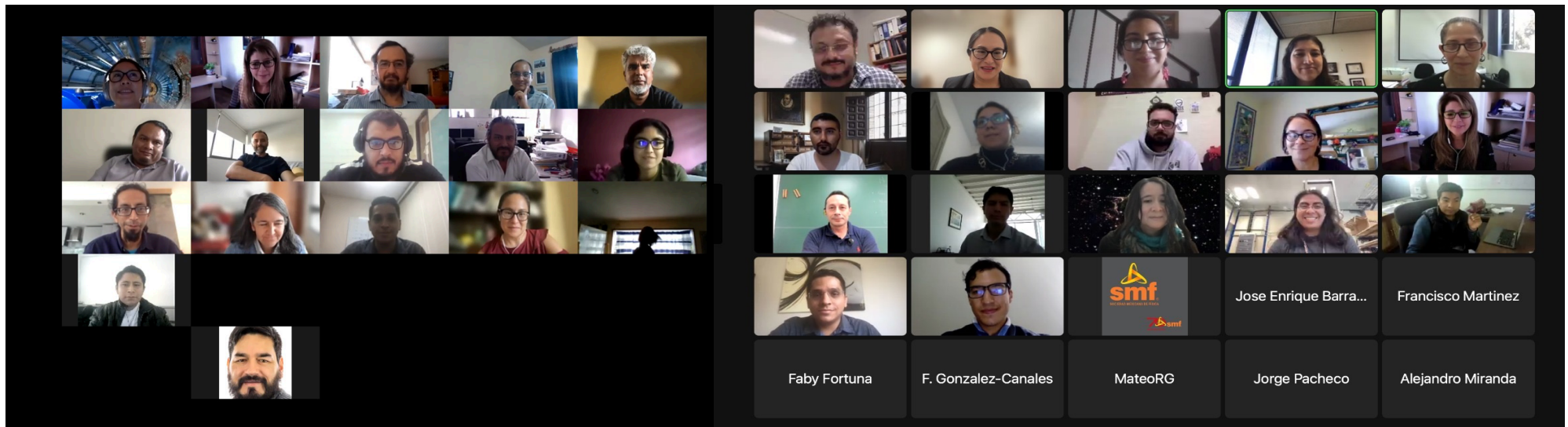
Isabel Pedraza (BUAP)

Humberto Martínez Huerta (U. de Monterrey)

Indico system, Mailing Lists, Design

Thanks for the hard work!

Group photo



Facebook & Meeting Recordings

ICARUS
Current Status

Started collecting data taking with the BNB & NuMI beams since March 2021, in parallel with commissioning activities. Cosmics, ν_μ , and ν_e samples were collected for trigger, calibration, event reconstruction studies, etc.

Contained BNB ν_μ CC candidate: $\nu_\mu + n \rightarrow \mu^- + p$

Contained NuMI ν_e CC candidate: $\nu_e + n \rightarrow e^- + p$

The commissioning period is over and the physics run started this June 9th 2022!

commissioning period eh has ended fisica
NuMI ν_e @ ICARUS

Guadalupe Moreno (Cinvestav)

División de Partículas y Campos - SMF was live.

23h · 🌐

XXXVI Annual Meeting of the Division of Particles and Fields - ...
XXXVI Reunión Anual de la División de Partículas y Campos - Viernes...

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173 People reached 42 Reactions, comments, and shares

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Most relevant

Olga Gpe. Felix · 14:14
You can ask in Spanish or English! Your questions on this platform are answered in real time during the presentations.

Like Reply 22h

Olga Gpe. Felix · 13:21

Write a comment... 🗨️ 📷 📺 📄

⚠️ You're commenting as Olga Gpe. Felix.

The W Boson Mass Measurement Excitement: Status and Perspectives for LHC

LHCb Fit Measurement

▶ $\phi^* = \tan\left(\frac{\pi - \Delta\phi}{2}\right) \sin(\theta_n^*)$, $\cos(\theta_n^*) = \tanh\left(\frac{\Delta\eta}{2}\right)$

▶ Simultaneous fit of the q/p_T^l distribution of W boson candidates and the ϕ^* distribution of Z boson candidates

Guillermo Gom...

División de Partículas y Campos - SMF was live.

September 8 at 9:04 · 🌐

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XXXVI Reunión Anual de la División de Partículas y Campos...

👍👍 22 4 Comments 193 Views

274 People reached 38 Reactions, comments, and shares

193 3-Second Video Views Retention curve

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Comments Hide

Most relevant

Olga Gpe. Felix · 1:07:28
your questions on this platform are answered in real time!

Like Reply 1d

Olga Gpe. Felix · 1:06:13
You can ask in Spanish or English!

Write a comment... 🗨️ 📷 📺 📄

División de Partículas y Campos - SMF was live.

16h · 🌐

XXXVI Annual Meeting of the Division of Particles and Fields - Viernes 2da Sesión
8-10 September 2022

Virtual

Lepton Flavour Violation in Hadron Decays of the Tau Lepton within the Littlest Higgs Model with T-parity

Iván Pacheco Zamudio
XXXVI Annual Meeting of the Division of Particles and Fields
September 9, 2022

The Center for Research and Advanced Studies of the National Polytechnic Institute

zoom

You, Melina Gómez, Pablo Roig Garcés and 3 others

2 Comments

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Most relevant

Olga Gpe. Felix · 1:07:28
your questions on this platform are answered in real time!

Like Reply 1d

Olga Gpe. Felix · 1:06:13
You can ask in Spanish or English!

Write a comment... 🗨️ 📷 📺 📄

XXXVI

Annual Meeting
Division of Particles and Fields
Mexican Physical Society
September 8-10, 2022, Virtual

Organizing Committee:

Olga Félix, BUAP

Isabel Pedraza, BUAP

Mario Rodríguez, BUAP

Félix González, BUAP

Juan Barranco, UG

Estela A. Garcés, UNAM

Javier Murillo, UNISON

Karen S. Caballero, UNACH

**Thanks for your
participation
See you at the
next event!**



XVIII Mexican Workshop on Particles and Fields 2022

November 21st - 25th,
Puebla - México

Scientific Program

- Higgs physics
- Beyond the Standard Model
- Neutrinos
- QCD and Hadronic Physics
- High energy heavy ion collisions
- Future experiments
- Particle detectors
- Flavour physics
- Astroparticle physics
- HEP applications in industry

IMPORTANT DATES

Registration deadline
Nov. 10th 2022

Abstract submission deadline
Nov. 1st 2022

Fellowships application deadline
Oct. 31st 2022



Organizing committee

- Karen S. Caballero (FCFM-UNACH, President of DPyC-SMF)
- Juan Barranco Monarca (U. de Guanajuato, Vice-President of DPyC-SMF)
- Eleazar Cuautele (ICN-UNAM)
- Olga Felix (FCE-BUAP)
- Arturo Fernández (VIEP/FCFM-BUAP)
- Roger Hernández (FCFM-UAS)
- Héctor Novales (FCFM-BUAP)
- Mario Iván Martínez (FCFM-BUAP)
- Luis Manuel Montañó (CINVESTAV)
- Mario Rodríguez (FCFM-BUAP, chair)
- Guillermo Tejeda (FCFM-BUAP)
- Lizardo Valencia (UNISON)
- Heber Zepeda (FCFM-BUAP)

Registration and more information at

<https://indico.nucleares.unam.mx/event/1933/>



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