

Memoria Grupo AHEP 2021

Más información en: <http://astroparticles.es>

Publicaciones en revistas indexadas Web of Science en 2021

Publicaciones en física teórica

1. *Dark matter as the origin of neutrino mass in the inverse seesaw mechanism*
S. Mandal, N. Rojas, R. Srivastava y **J.W.F. Valle**
Physics Letters B **821** (2021) 136609 [arXiv:1907.07728]
DOI: 10.1016/j.physletb.2021.136609
2. *Bounds on light sterile neutrino mass and mixing from cosmology and laboratory searches*
S. Hagstotz, P.F. de Salas, **S. Gariazzo**, M. Gerbino, M. Lattanzi, S. Vagnozzi, K. Freese y **S. Pastor**
Physical Review D **104** (2021) 123524 [arXiv:2003.02289]
DOI: 10.1103/PhysRevD.104.123524
3. *Bounds on the triplet fermions in type-III seesaw and implications for collider searches*
A. Das y **S. Mandal**
Nuclear Physics B **966** (2021) 115374 [arXiv:2006.04123]
DOI: 10.1016/j.nuclphysb.2021.115374
4. *2020 global reassessment of the neutrino oscillation picture*
P.F. de Salas, D.V. Forero, **S. Gariazzo**, **P. Martínez-Miravé**, O. Mena, **C.A. Ternes**, **M. Tórtola** y **J.W.F. Valle**
Journal of High Energy Physics **02** (2021) 071 [arXiv:2006.11237]
DOI: 10.1007/JHEP02(2021)071
5. *Signatures of ultralight dark matter in neutrino oscillation experiments*
A. Dev, P.A.N. Machado y **P. Martínez-Miravé**
Journal of High Energy Physics **01** (2021) 094 [arXiv:2007.03590]
DOI: 10.1007/JHEP01(2021)094
6. *Ultralight scalars in leptonic observables*
P. Escribano y **A. Vicente**
Journal of High Energy Physics **03** (2021) 240 [arXiv:2008.01099]
DOI: 10.1007/JHEP03(2021)240
7. *Interference effect in lepton number violating and conserving meson decays for a left-right symmetric model*
R.M. Godbole, S.P. Maharathy, **S. Mandal**, M. Mitra y N. Sinha
Physical Review D **104** (2021) 095009 [arXiv:2008.05467]
DOI: 10.1103/PhysRevD.104.095009
8. *Trimaximal neutrino mixing from scotogenic A_4 family symmetry*
G.J. Ding, **Jun-Nan Lu** y **J.W.F. Valle**

- Physics Letters B **815** (2021) 136122 [arXiv:2009.04750]
DOI: 10.1016/j.physletb.2021.136122
9. *Electroweak symmetry breaking in the inverse seesaw mechanism*
S. Mandal, R. Srivastava y **J.W.F. Valle**
Journal of High Energy Physics **03** (2021) 212 [arXiv:2009.10116]
DOI: 10.1007/JHEP03(2021)212
 10. *The galaxy power spectrum take on spatial curvature and cosmic concordance*
S. Vagnozzi, E. Di Valentino, **S. Gariazzo**, A. Melchiorri, O. Mena y J. Silk
Physics of the Dark Universe **33** (2021) 100851 [arXiv:2010.02230]
DOI: 10.1016/j.dark.2021.100851
 11. *Axionlike particles searches in reactor experiments*
D. Aristizábal Sierra, **V. De Romeri**, L.J. Flores y D.K. Papoulias
Journal of High Energy Physics **03** (2021) 294 [arXiv:2010.15712]
DOI: 10.1007/JHEP03(2021)294
 12. *DsixTools 2.0: the effective field theory toolkit*
J. Fuentes-Martín, P. Ruiz-Femenía, **A. Vicente** y J. Virto
European Physical Journal C **81** (2021) 167 [arXiv:2010.16341]
DOI: 10.1140/epjc/s10052-020-08778-y
 13. *The inverse seesaw family: Dirac and Majorana*
S. Centelles Chuliá, R. Srivastava y **A. Vicente**
Journal of High Energy Physics **03** (2021) 248 [arXiv:2011.06609]
DOI: 10.1007/JHEP03(2021)248
 14. *Towards a precision calculation of N_{eff} in the Standard Model. Part II. Neutrino decoupling in the presence of flavour oscillations and finite-temperature QED*
J.J. Bennett, G. Buldgen, P.F. de Salas, M. Drewes, **S. Gariazzo**, **S. Pastor** e Y.Y.Y. Wong
Journal of Cosmology and Astroparticle Physics **04** (2021) 073 [arXiv:2012.02726]
DOI: 10.1088/1475-7516/2021/04/073
 15. *Minimal scoto-seesaw mechanism with spontaneous CP violation*
D.M. Barreiros, F.R. Joaquim, R. Srivastava y **J.W.F. Valle**
Journal of High Energy Physics **04** (2021) 249 [arXiv:2012.05189]
DOI: 10.1007/JHEP04(2021)249
 16. *Supernova constraints on dark flavored sectors*
J. Martin Camalich, **J. Terol-Calvo**, L. Tolos y R. Ziegler
Physical Review D **103** (2021) L121301 [arXiv:2012.11632]
DOI: 10.1103/PhysRevD.103.L121301
 17. *Phenomenology of fermion dark matter as neutrino mass mediator with gauged B-L*
C. Alvarado, C. Bonilla, J. Leite y **J.W.F. Valle**
Physics Letters B **817** (2021) 136292 [arXiv:2102.07216]
DOI: 10.1016/j.physletb.2021.136292

18. *Non-unitary neutrino mixing in short and long-baseline experiments*
D.V. Forero, C. Giunti, C.A. Ternes y **M. Tórtola**
Physical Review D **104** (2021) 075030 [arXiv:2103.01998]
DOI: 10.1103/PhysRevD.104.075030
19. *Dynamical inverse seesaw mechanism as a simple benchmark for electroweak breaking and Higgs boson studies*
S. Mandal, J.C. Romão, R. Srivastava y **J.W.F. Valle**
Journal of High Energy Physics **07** (2021) 029 [arXiv:2103.02670]
DOI: 10.1007/JHEP07(2021)029
20. *Detecting long-lived multi-charged particles in neutrino mass models with MoEDAL*
M. Hirsch, R. Masełek y K. Sakurai
European Physical Journal C **81** (2021) 697 [arXiv:2103.05644]
DOI: 10.1140/epjc/s10052-021-09507-9
21. *Non-standard neutrino oscillations: perspective from unitarity triangles*
M. Masud, P. Mehta, C.A. Ternes y **M. Tórtola**
Journal of High Energy Physics **05** (2021) 171 [arXiv:2103.11143]
DOI: 10.1007/JHEP05(2021)171
22. $(g - 2)_{e,\mu}$ in an extended inverse type-III seesaw
P. Escribano, J. Terol-Calvo, **A. Vicente**
Physical Review D **103** (2021) 115018 [arXiv:2104.03705]
DOI: 10.1103/PhysRevD.103.115018
23. *Combined analysis of neutrino decoherence at reactor experiments*
A. de Gouvêa, **V. De Romeri** y C.A. Ternes
Journal of High Energy Physics **06** (2021) 042 [arXiv:2104.05806]
DOI: 10.1007/JHEP06(2021)042
24. *The stochastic axiverse*
M. Reig
Journal of High Energy Physics **09** (2021) 207 [arXiv:2104.09923]
DOI: 10.1007/JHEP09(2021)207
25. *The simplest scoto-seesaw model: WIMP dark matter phenomenology and Higgs vacuum stability*
S. Mandal, R. Srivastava y **J.W.F. Valle**
Physics Letters B **819** (2021) 136458 [arXiv:2104.13401]
DOI: 10.1016/j.physletb.2021.136458
26. *Radiative seesaw dark matter*
E. Ma y **V. De Romeri**
Physical Review D **104** (2021) 055004 [arXiv:2105.00552]
DOI: 10.1103/PhysRevD.104.055004
27. *Global constraints on neutral-current generalized neutrino interactions*
F.J. Escrihuela, L.J. Flores, O.G. Miranda y J. Rendón
Journal of High Energy Physics **07** (2021) 061 [arXiv:2105.06484]
DOI: 10.1007/JHEP07(2021)061

28. *Cosmological radiation density with non-standard neutrino-electron interactions*
P.F. de Salas, S. Gariazzo, **P. Martínez-Miravé**, **S. Pastor** y **M. Tórtola**
Physics Letters B **820** (2021) 136508 [arXiv:2105.08168]
DOI: 10.1016/j.physletb.2021.136508
29. *Heavy neutral leptons in effective field theory and the high-luminosity LHC*
G. Cottin, J.C. Helo, **M. Hirsch**, A. Titov y Z.S. Wang
Journal of High Energy Physics **09** (2021) 039 [arXiv:2105.13851]
DOI: 10.1007/JHEP09(2021)039
30. *Signatures of primordial black hole dark matter at DUNE and THEIA*
V. De Romeri, **P. Martínez-Miravé** y **M. Tórtola**
Journal of Cosmology and Astroparticle Physics **10** (2021) 051 [arXiv:2106.05013]
DOI: 10.1088/1475-7516/2021/10/051
31. *An ultraviolet completion for the Scotogenic model*
P. Escribano y **A. Vicente**
Physics Letters B **823** (2021) 136717 [arXiv:2107.10265]
DOI: 10.1016/j.physletb.2021.136717
32. *Low-energy probes of sterile neutrino transition magnetic moments*
O.G. Miranda, D.K. Papoulias, O. Sanders, **M. Tórtola** y **J.W.F. Valle**
Journal of High Energy Physics **12** (2021) 191 [arXiv:2109.09545]
DOI: 10.1007/JHEP12(2021)191

Publicaciones en el marco de grandes colaboraciones internacionales

1. *Searching for solar KDAR with DUNE*
DUNE collaboration, B. Abi et al [incluye a **V. De Romeri**, **M. Masud**, **C.A. Ternes**, **M. Tórtola** y **J.W.F. Valle**]
Journal of Cosmology and Astroparticle Physics **10** (2021) 065 [arXiv:2107.09109]
DOI: 10.1088/1475-7516/2021/10/065
2. *Deep Underground Neutrino Experiment (DUNE) Near Detector Conceptual Design Report*
DUNE collaboration, B. Abi et al [incluye a **V. De Romeri**, **M. Masud**, **C.A. Ternes**, **M. Tórtola** y **J.W.F. Valle**]
Instruments **5** (2021) 31 [arXiv:2103.13910]
DOI: 10.3390/instruments5040031
3. *Prospects for beyond the Standard Model physics searches at the Deep Underground Neutrino Experiment*
DUNE collaboration, B. Abi et al [incluye a **V. De Romeri**, **M. Masud**, **C.A. Ternes**, **M. Tórtola** y **J.W.F. Valle**]
European Physical Journal C **81** (2021) 322 [arXiv:2008.12769]
DOI: 10.1140/epjc/s10052-021-09007-w
4. *Supernova neutrino burst detection with the Deep Underground Neutrino Experiment*
DUNE collaboration, B. Abi et al [incluye a **V. De Romeri**, **M. Masud**, **C.A. Ternes**, **M. Tórtola** y **J.W.F. Valle**]

Ponencias y comunicaciones a congresos

1. *Generalizing the scotogenic model*
P. Escribano
17th MultiDark Consolider Workshop
conferencia virtual, 25-27 enero
2. *Signatures of ultralight dark matter in neutrino oscillation experiments*
P. Martínez-Miravé
17th MultiDark Consolider Workshop
conferencia virtual, 25-27 enero
3. *Neutrinos and what comes next*
J.W.F. Valle
Beyond Standard Model: From Theory to Experiment (BSM 2021)
conferencia virtual, 29 marzo - 2 abril
4. *Ultralight scalars in leptonic observables*
P. Escribano
Beyond Standard Model: From Theory to Experiment (BSM 2021)
conferencia virtual, 29 marzo - 2 abril
5. *An introduction to the effective number of neutrinos*
S. Pastor
Latest Advances in the Physics of BBN and Neutrino Decoupling
conferencia virtual, 12-13 abril
6. *Signatures of ultralight scalars in neutrino oscillation experiments*
P. Martínez-Miravé
First EuCAPT Annual Symposium
conferencia virtual, 5-7 mayo
7. *$g-2$ anomalies and neutrino mass*
R. Cepedello
5th Red LHC workshop
conferencia virtual, 10-12 mayo
8. *Vacuum stability in dynamical seesaw model*
S. Mandal
Phenomenology 2021 Symposium
conferencia virtual, 24-26 mayo
9. *Signatures of ultralight scalars in neutrino oscillations (póster)*
P. Martínez-Miravé
Invisibles 2021 Workshop
conferencia virtual, 31 mayo - 4 junio

10. *Theory review on Charged Lepton Flavor Violation*
A. Vicente
19th Conference on Flavor Physics and CP Violation (FPCP 2021)
conferencia virtual, 7-11 junio
11. *Non-standard interactions and the future of the neutrino solar sector* (póster)
P. Martínez-Miravé
28th International Workshop on Weak Interactions and Neutrinos (WIN2021)
conferencia virtual, 7-12 junio
12. *Dark matter in a variant of the Scotogenic model*
A. Vicente
Materia Oscura en Colombia (MOCa 2021)
conferencia virtual, 8-10 junio
13. *Maximally misaligned axions*
M. Reig
Materia Oscura en Colombia (MOCa 2021)
conferencia virtual, 8-10 junio
14. *Dark matter in a variant of the scotogenic model*
M. Puerta
The Future is DARK: 1st NCTS TG2.1 Hsinchu Hub Workshop
conferencia virtual, 29 junio - 1 julio
15. *The simplest scoto-seesaw model: WIMP dark matter phenomenology and Higgs vacuum stability*
S. Mandal
The Future is DARK: 1st NCTS TG2.1 Hsinchu Hub Workshop
conferencia virtual, 29 junio - 1 julio
16. *Cosmological radiation density with non-standard neutrino-electron interactions* (póster)
P. Martínez-Miravé
ISAPP 2021 Valencia: Neutrino Physics, Astrophysics and Cosmology
conferencia virtual, 21-30 julio
17. *Generalizing the Scotogenic model* (póster)
P. Escribano
ISAPP 2021 Valencia: Neutrino Physics, Astrophysics and Cosmology
conferencia virtual, 21-30 julio
18. *A global overview of the three-neutrino oscillation picture*
M. Tórtola
NuCo 2021: Neutrinos en Colombia
conferencia virtual, 28-30 julio
19. *An ultraviolet completion for the Scotogenic model*
A. Vicente
NuCo 2021: Neutrinos en Colombia
conferencia virtual, 28-30 julio

20. *Signatures of primordial black hole dark matter at DUNE and THEIA*
V. De Romeri
NuCo 2021: Neutrinos en Colombia
conferencia virtual, 28-30 julio
21. *Neutrinos as a new physics pathfinder*
J.W.F. Valle
20th Lomonosov Conference on Elementary Particle Physics
conferencia virtual, 19-25 agosto
22. *Maximally misaligned axions*
M. Reig
XXVIII International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY 2021)
conferencia virtual, 23-28 agosto
23. *Cosmological radiation density with non-standard neutrino-electron interactions*
P. Martínez-Miravé
17th Int. Conference on Topics in Astroparticle and Underground Physics (TAUP 2021)
conferencia virtual, 26 agosto - 3 septiembre
24. *Maximally misaligned axions*
M. Reig
17th Int. Conference on Topics in Astroparticle and Underground Physics (TAUP 2021)
conferencia virtual, 26 agosto - 3 septiembre
25. *Dark matter in a charged variant of the Scotogenic model*
M. Puerta
17th Int. Conference on Topics in Astroparticle and Underground Physics (TAUP 2021)
conferencia virtual, 26 agosto - 3 septiembre
26. *The simplest scoto-seesaw model: WIMP dark matter phenomenology and Higgs vacuum stability*
S. Mandal
17th Int. Conference on Topics in Astroparticle and Underground Physics (TAUP 2021)
conferencia virtual, 26 agosto - 3 septiembre
27. *Generalizing the Scotogenic model*
P. Escribano
17th Int. Conference on Topics in Astroparticle and Underground Physics (TAUP 2021)
conferencia virtual, 26 agosto - 3 septiembre
28. *Neutrino NSI effects on future solar sector measurements*
S. Molina Sedgwick
17th Int. Conference on Topics in Astroparticle and Underground Physics (TAUP 2021)
conferencia virtual, 26 agosto - 3 septiembre
29. *Signatures of primordial black hole dark matter at DUNE and THEIA*
V. De Romeri
17th Int. Conference on Topics in Astroparticle and Underground Physics (TAUP 2021)
conferencia virtual, 26 agosto - 3 septiembre

30. *Neutrinos as pathfinders of new physics*
 J.W.F. Valle
 Corfu Summer Institute: Workshop on Standard Model and Beyond
 conferencia virtual, 30 agosto - 8 septiembre
31. *Ultralight scalars in leptonic observables*
 P. Escribano
 22nd Particles and Nuclei International Conference (PANIC 2021)
 conferencia virtual, 5-10 septiembre
32. *Neutrino oscillations: current status and future opportunities*
 M. Tórtola
 22nd Particles and Nuclei International Conference (PANIC 2021)
 conferencia virtual, 5-10 septiembre
33. *Neutrino quantum decoherence at reactor experiments*
 V. De Romeri
 22nd Int. Workshop on Neutrinos from Accelerators (NuFact 2021)
 Cagliari (Italia), 6-11 septiembre
34. *Cosmic Neutrino Background essentials: talks 2, 3 and 5*
 S. Pastor
 EuCAPT Astroneutrino Theory Workshop 2021
 Praga (Rep. Checa), 20 septiembre - 1 octubre
35. *Cosmological radiation density and neutrino non-standard interactions*
 P. Martínez-Miravé
 COST CA18108 Second Annual Conference
 Corfú (Grecia), 6-8 octubre
36. *Long-lived right-handed neutrinos at the LHC: Probing NRSMEFT operators*
 R. Beltrán
 18th MultiDark Consolider Workshop
 La Rábida (Huelva), 18-20 octubre
37. *A predictive A_4 three-family symmetry model*
 O. Medina
 18th MultiDark Consolider Workshop
 La Rábida (Huelva), 18-20 octubre
38. *Signatures of primordial black hole dark matter at DUNE and THEIA*
 V. De Romeri
 18th MultiDark Consolider Workshop
 La Rábida (Huelva), 18-20 octubre
39. *Cosmological radiation density with non-standard neutrino-electron interactions*
 S. Pastor
 18th MultiDark Consolider Workshop
 La Rábida (Huelva), 18-20 octubre

40. *Beyond the Standard Model Physics*
J.W.F. Valle
6th Colombian Meeting on High Energy Physics (ComHEP)
conferencia virtual, 29 noviembre - 3 diciembre
41. *Signatures of primordial black hole dark matter at DUNE and THEIA*
V. De Romeri
6th Colombian Meeting on High Energy Physics (ComHEP)
conferencia virtual, 29 noviembre - 3 diciembre

Proceedings publicados

1. *Neutrino oscillations and flavor theories*
J.W.F. Valle
40th International Conference on High Energy Physics (ICHEP 2020)
Proceedings of Science PoS(**ICHEP2020**)185

Tesis de grado

1. *Generación de masas de neutrinos con el mecanismo de seesaw inverso*
Antonio Herrero Brocal
Grado en Física, Universidad de Valencia
Dirigida por Avelino Vicente
Fecha lectura: convocatoria de julio

Tesis de máster

1. *Long-lived particles and neutrino mass models*
Rebeca Beltrán Lloría
Máster en Física Avanzada, Universidad de Valencia
Dirigida por Martin Hirsch
Fecha lectura: convocatoria de julio
2. *Neutrino masses in inverse see-saw models*
Andrés Mora Martínez
Máster en Física Avanzada, Universidad de Valencia
Dirigida por Avelino Vicente
Fecha lectura: convocatoria de septiembre

Tesis doctorales

1. *Radiative neutrino masses: A window to new physics*
Ricardo Cepedello Pérez
Universidad de Valencia
Dirigida por Martin Hirsch
Fecha lectura: 30 marzo

2. *Aspects of physics beyond the Standard Model*
 Mario Reig López
 Universidad de Valencia
 Dirigida por José W.F. Valle
 Fecha lectura: 1 octubre
3. *Theory and phenomenology of Dirac neutrinos: Symmetry breaking patterns, flavour implications and Dark Matter*
 Salvador Centelles Chuliá
 Universidad de Valencia
 Dirigida por José W.F. Valle y Rahul Srivastava
 Fecha lectura: 28 octubre

Cursos impartidos

1. *Introduction to Supersymmetry*
 M. Hirsch
 Curso para estudiantes de doctorado (10 horas)
 IFIC, 7-25 junio
2. *Neutrino mass models*
 A. Vicente
 XIX Mexican School of Particles and Fields (3 horas)
 escuela online, 9-13 agosto
3. *Neutrino physics*
 M. Tórtola
 COST CA18108 First Training School (4 horas)
 Corfú (Grecia), 27 septiembre - 5 octubre

Coloquios y seminarios impartidos

- *Minimal seesaw and beyond*
 M. Hirsch
 Inst. recherche en mathématique et physique, UC Lovaina (Bélgica), seminario remoto, 23 febrero
- *Global fits to neutrino oscillations: a tale of hints and tensions*
 M. Tórtola
 Univ. Sheffield (Reino Unido), seminario remoto, 22 marzo
- *The inverse seesaw mechanism for neutrino masses*
 A. Vicente
 Univ. Siegen (Alemania), seminario remoto, 26 abril
- *Vacuum stability in dynamical seesaw models*
 S. Mandal
 School of Physics & Astronomy, Univ. Glasgow (Reino Unido), seminario remoto, 5 mayo

- *Neutrinos as new physics pathfinders*
J.W.F. Valle
ICN-IF, Univ. Nacional Autónoma de México, seminario remoto, 19 mayo
- *The inverse seesaw mechanism for neutrino masses*
A. Vicente
Sydney-CPPC, Univ. of New South Wales (Australia), seminario remoto, 2 septiembre
- *Probing new physics with neutrino and dark matter experiments*
V. De Romeri
Sydney-CPPC, Univ. of New South Wales (Australia), seminario remoto, 23 septiembre
- *Neutrinos and long-lived particles*
M. Hirsch
Inst. Milenio de Física Subatómica en la Frontera de Altas Energías (SAPHIR), Chile, seminario remoto, 1 octubre
- *Terrestrial and cosmological probes of non-standard neutrino interactions*
P. Martínez-Miravé
Ciclo Gravitículas, Instituto de Física, Pontificia Univ. Católica de Chile, seminario remoto, 25 noviembre
- *Neutrinos as new physics lamp posts*
J.W.F. Valle
Seminarios de Física de Altas Energías, CINVESTAV, México, seminario remoto, 30 noviembre