

## Memoria Grupo AHEP 2009

Componentes del Grupo durante todo o parte del año 2009:

José W.F. Valle, Martin Hirsch, Sergio Pastor, Alfred Bartl, Gennaro Miele, D.P. Roy, Satoru Kaneko, Stefano Morisi, Antonio Palazzo, Eduardo Peinado, Federica Bazzocchi, Marco Taoso, Siba Prasad Das, Andreu Esteban, Urbano França, Teguayco Pinto, Avelino Vicente, Lazlo Reichert, Mohamed Sofiane Boucenna y Francisco J. Escrivuela (+ colaboradores externos).

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

### Artículos publicados en revistas indexadas ISI en 2009

1. *Working group report: Neutrino Physics*  
S. Choubey et al [incluye a **M. Hirsch**]  
Pramana – Journal of Physics **72** (2009) 269-275
2. *The neutrino mass matrix and (selected) variants of  $A_4$*   
**M. Hirsch**  
Pramana – Journal of Physics **72** (2009) 183-193
3. *Physics at a future Neutrino Factory and super-beam facility*  
A. Bandyopadhyay et al [incluye a **J.W.F. Valle**]  
Reports on Progress in Physics **72** (2009) 106201 (arXiv:0710.4947)
4. *Embedding  $A_4$  into  $SU(3) \times U(1)$  flavor symmetry: Large neutrino mixing and fermion mass hierarchy in  $SO(10)$  GUT*  
**F. Bazzocchi**, **S. Morisi**, M. Picariello y E. Torrente-Luján  
Journal of Physics G **36** (2009) 015002 (arXiv:0802.1693)
5. *Using tau polarization to probe the stau co-annihilation region of  $mSUGRA$  model at LHC*  
R.M. Godbole, M. Guchait y **D.P. Roy**  
Physical Review D **79** (2009) 095015 (arXiv:0807.2390)
6. *Relic density of neutrinos with primordial asymmetries*  
**S. Pastor**, **T. Pinto** y G.G. Raffelt  
Physical Review Letters **102** (2009) 241302 (arXiv:0808.3137)
7. *Primordial Nucleosynthesis: from precision cosmology to fundamental physics*  
F. Iocco, G. Mangano, **G. Miele**, O. Pisanti y P.D. Serpico  
Physics Reports **472** (2009) 1-76 (arXiv:0809.0631)
8. *Finding the Higgs Boson through Supersymmetry*  
F. de Campos, O.J.P. Eboli, M.B. Magro, D. Restrepo y **J.W.F. Valle**  
Physical Review D **80** (2009) 015002 (arXiv:0809.1637)
9. *Radio constraints on dark matter annihilation in the galactic halo and its substructures*  
**E. Borriello**, A. Cuoco y **G. Miele**  
Physical Review D **79** (2009) 023518 (arXiv:0809.2990)

10. *Modelling tri-bimaximal neutrino mixing*  
**M. Hirsch, S. Morisi y J.W.F. Valle**  
 Physical Review D **79** (2009) 016001 (arXiv:0810.0121)
11.  *$S_4$  as a natural flavor symmetry for lepton mixing*  
**F. Bazzocchi y S. Morisi**  
 Physical Review D **80** (2009) 096005 (arXiv:0811.0345)
12. *Neutrino masses, leptogenesis and dark matter in hybrid seesaw*  
 P.H. Gu, **M. Hirsch**, U. Sarkar y **J.W.F. Valle**  
 Physical Review D **79** (2009) 033010 (arXiv:0811.0953)
13. *Probing non-standard neutrino-electron interactions with solar and reactor neutrinos*  
 A. Bolaños, O.G. Miranda, **A. Palazzo**, M.A. Tórtola y **J.W.F. Valle**  
 Physical Review D **79** (2009) 113012 (arXiv:0812.4417)
14. *Tri-Bimaximal lepton mixing with  $A_4 \times (Z_2)^3$*   
**S. Morisi**  
 Physical Review D **79** (2009) 033008 (arXiv:0901.1080)
15. *Fermion masses and mixings in a  $S_4$  based model*  
 F. Bazzocchi, L. Merlo y **S. Morisi**  
 Nuclear Physics B **816** (2009) 204-226 (arXiv:0901.2086)
16. *Majoron emission in muon and tau decays revisited*  
**M. Hirsch, A. Vicente**, J. Meyer y W. Porod  
 Physical Review D **79** (2009) 055023 (arXiv:0902.0525)
17. *Phenomenological Consequences of See-Saw in  $S_4$  Based Models*  
 F. Bazzocchi, L. Merlo y **S. Morisi**  
 Physical Review D **80** (2009) 053003 (arXiv:0902.2849)
18. *Flavour violation at the LHC: type-I versus type-II seesaw in minimal supergravity*  
 J.N. Esteves, **M. Hirsch**, W. Porod, J.C. Romão, **J.W.F. Valle** y A. Villanova del Moral  
 Journal of High Energy Physics **05** (2009) 003 (arXiv:0903.1408)
19. *LHC phenomenology of the  $\mu\nu$ SSM*  
 A. Bartl, **M. Hirsch, A. Vicente**, S. Liebler y W. Porod  
 Journal of High Energy Physics **05** (2009) 120 (arXiv:0903.3596)
20. *Sensitivity on Earth Core and Mantle densities using Atmospheric Neutrinos*  
 E. Borriello, G. Mangano, A. Marotta, G. Miele, P. Migliozzi, C.A. Moura, **S. Pastor**, O. Pisanti  
 y P.E. Strolin  
 Journal of Cosmology and Astroparticle Physics **06** (2009) 030 (arXiv:0904.0796)
21. *Impact of squark generation mixing on the search for gluinos at LHC*  
**A. Bartl**, K. Hidaka, K. Hohenwarter-Sodek, T. Kernreiter, W. Majerotto y W. Porod  
 Physics Letters B **679** (2009) 260-266 (arXiv:0905.0132)

22. *A<sub>4</sub>-based tri-bimaximal mixing within inverse and linear seesaw schemes*  
**M. Hirsch, S. Morisi y J.W.F. Valle**  
 Physics Letters B **679** (2009) 454-459 (arXiv:0905.3056)
23. *Is the baryon asymmetry of the Universe related to galactic magnetic fields?*  
 V.B. Semikoz, D.D. Sokoloff y **J.W.F. Valle**  
 Physical Review D **80** (2009) 083510 (arXiv:0905.3365)
24. *On the full Boltzmann equations for Leptogenesis*  
 J. Garayoa, **S. Pastor, T. Pinto**, N. Rius y O. Vives  
 Journal of Cosmology and Astroparticle Physics **09** (2009) 035 (arXiv:0905.4834)
25. *Constraining nonstandard neutrino-quark interactions with solar, reactor and accelerator data*  
**F.J. Escrihuela**, O.G. Miranda, M.A. Tórtola y **J.W.F. Valle**  
 Physical Review D **80** (2009) 105009 (arXiv:0907.2630)
26. *Inverse tri-bimaximal type-III seesaw and lepton flavor violation*  
 D. Ibáñez, **S. Morisi y J.W.F. Valle**  
 Physical Review D **80** (2009) 053015 (arXiv:0907.3109)
27. *Dark matter in minimal supergravity with type-II seesaw*  
 J.N. Esteves, S. Kaneko, J.C. Romão, **M. Hirsch** y W. Porod  
 Physical Review D **80** (2009) 095003 (arXiv:0907.5090)
28. *Model independent constraints on mass-varying neutrino scenarios*  
**U. França**, M. Lattanzi, J. Lesgourgues y **S. Pastor**  
 Physical Review D **80** (2009) 083506 (arXiv:0908.0534)
29. *Confusing non-zero  $\theta_{13}$  with non-standard interactions in the solar neutrino sector*  
**A. Palazzo y J.W.F. Valle**  
 Physical Review D **80** (2009) 091301 (arXiv:0909.1535)
30. *An A<sub>4</sub> model for lepton masses and mixings*  
**S. Morisi y E. Peinado**  
 Physical Review D **80** (2009) 113011 (arXiv:0910.4389)
31. *Atmospheric effects on extensive air showers observed with the surface detector of the Pierre Auger observatory*  
 The Pierre Auger Collaboration [incluye a **S. Pastor y T. Pinto**]  
 Astroparticle Physics **32** (2009) 89-99 (arXiv:0906.5497)
32. *Upper limit on the cosmic-ray photon fraction at EeV energies from the Pierre Auger Observatory*  
 The Pierre Auger Collaboration [incluye a **S. Pastor y T. Pinto**]  
 Astroparticle Physics **31** (2009) 399-406 (arXiv:0903.1127)
33. *Limit on the diffuse flux of ultra-high energy tau neutrinos with the surface detector of the Pierre Auger Observatory*  
 The Pierre Auger Collaboration [incluye a **S. Pastor y T. Pinto**]  
 Physical Review D **79** (2009) 102001 (arXiv:0903.3385)

## Ponencias y comunicaciones a congresos

1. *Neutrino mass and dark matter candidates*  
J.W.F. Valle  
Workshop on High-energy phenomena in Galaxy Clusters and Dark Matter Searches  
Instituto de Astrofísica de Andalucía, Granada, Febrero 2009
2. *A model for tri-bimaximal neutrino mixing and a dark matter candidate*  
S. Morisi  
Workshop on High-energy phenomena in Galaxy Clusters and Dark Matter Searches  
Instituto de Astrofísica de Andalucía, Granada, Febrero 2009
3. *Status of sterile neutrino as a dark matter candidate*  
A. Palazzo  
Workshop on High-energy phenomena in Galaxy Clusters and Dark Matter Searches  
Instituto de Astrofísica de Andalucía, Granada, Febrero 2009
4. *Neutrinos in the Early Universe*  
S. Pastor  
Colloquium: Physics of the Standard Model of the Universe: theory and observations  
Colegio de España, París (Francia), Junio 2009
5. *Probing the origin of neutrino mass at the LHC*  
J.W.F. Valle  
Int. Workshop on Beyond the Standard Model Physics and LHC Signatures (BSM-LHC)  
Boston (Estados Unidos), Junio 2009
6. *Neutrino mass in supersymmetry: Theory and implications*  
J.W.F. Valle  
17th Int. Conf. on Supersymmetry and the Unification of Fundamental Interactions (SUSY 2009)  
Boston (Estados Unidos), Junio 2009
7. *Probing  $\theta_{13}$  with global neutrino data analysis*  
A. Palazzo  
XXIèmes Rencontres de Blois: Windows on the Universe  
Blois (Francia), Junio 2009
8. *Progress in the understanding of neutrino properties*  
J.W.F. Valle  
11th Int. conference on Topics in Astroparticle and Underground Physics (TAUP 2009)  
Roma (Italia), Julio 2009
9. *Relic density of neutrinos with primordial asymmetries*  
S. Pastor  
11th Int. conference on Topics in Astroparticle and Underground Physics (TAUP 2009)  
Roma (Italia), Julio 2009
10. *Probing  $\theta_{13}$  with global neutrino data analysis*  
A. Palazzo

- 11th Int. conference on Topics in Astroparticle and Underground Physics (TAUP 2009)  
Roma (Italia), Julio 2009
11. *Probing the Majorana nature of neutrinos by the neutrinoless double beta decay*  
S. Morisi  
11th Int. conference on Topics in Astroparticle and Underground Physics (TAUP 2009)  
Roma (Italia), Julio 2009
  12. *Neutrino mass models and LHC*  
M. Hirsch  
Summer Institute 2009 on Particle Physics Phenomenology  
Fujiyoshida (Japón), Agosto 2009
  13. *Status of Neutrino Theory*  
J.W.F. Valle  
XXIV Int. Symposium on Lepton Photon interactions at high energies (Lepton Photon 2009)  
Hamburgo (Alemania), Agosto 2009
  14. *Neutrino masses in R-parity violating SUSY (póster)*  
A. Vicente  
XXXVII SLAC Summer Institute (SSI 2009)  
Menlo Park (Estados Unidos), Agosto 2009
  15. *Testing neutrino mass models at LHC*  
M. Hirsch  
22nd Int. Workshop on Weak Interactions and Neutrinos (WIN 2009)  
Perugia (Italia), Septiembre 2009
  16. *Neutrinos, dark matter and leptogenesis*  
J.W.F. Valle  
Theoretical miniWorkshop on Dark Matters  
Madrid, Septiembre 2009
  17. *Cosmological neutrinos: theory*  
S. Pastor  
5th Int. Workshop on Low Energy Neutrino Physics (LowNu 2009)  
Reims (Francia), Octubre 2009
  18. *Oscillation parameters, CP violation and NSI*  
J.W.F. Valle  
5th Int. Workshop on Low Energy Neutrino Physics (LowNu 2009)  
Reims (Francia), Octubre 2009
  19. *Low energy seesaw and lepton flavor violation*  
S. Morisi  
Int. Conference on Neutrino Physics in the LHC Era  
Luxor (Egipto), Noviembre 2009
  20. *Standard and non-standard neutrino properties: New clues from the solar neutrino sector*  
A. Palazzo

Int. Conference on Neutrino Physics in the LHC Era  
Luxor (Egipto), Noviembre 2009

21. *LFV in spontaneous R-parity violating SUSY*

A. Vicente

Kick-off Workshop of the Working Group on "Neutrino masses and Lepton flavor violation at the LHC"

Würzburg (Alemania), Noviembre 2009

**Actas / Proceedings publicados**

1. *Neutrinos as cosmological messengers*

J.W.F. Valle

4th International Workshop on the Dark Side of the Universe

El Cairo (Egipto), Junio 2008

AIP Conference Proceedings **1115** (2009) 13-26

2. *High energy neutrinos to see inside the Earth*

E. Borriello, G. Mangano, A. Marotta, G. Miele, P. Migliozzi, C.A. Moura, **S. Pastor**, O. Pisanti y P.E. Strolin

Cosmic Ray International Seminars (CRIS 2008)

Malfa (Italia), Septiembre 2008

Nuclear Physics B (Proceedings Supplements) **190** (2009) 150-155

3. *Radio Signal by Galactic Dark Matter*

E. Borriello, A. Cuoco y G. Miele

Cosmic Ray International Seminars (CRIS 2008)

Malfa (Italia), Septiembre 2008

Nuclear Physics B (Proceedings Supplements) **190** (2009) 185-190

4. *Neutrino masses and mixings: 2008 status*

G.L. Fogli, E. Lisi, A. Marrone, A. Palazzo, A.M. Rotunno

5th Neutrino Oscillation Workshop (NOW 2008)

Conca Specchiulla, Otranto (Italia), Septiembre 2008

Nuclear Physics B (Proceedings Supplements) **188** (2009) 27-30

5. *Decoherence in supernova neutrino transformations*

A. Esteban-Pretel, S. Pastor, R. Tomàs, G.G. Raffelt y G. Sigl

5th Neutrino Oscillation Workshop (NOW 2008)

Conca Specchiulla, Otranto (Italia), Septiembre 2008

Nuclear Physics B (Proceedings Supplements) **188** (2009) 121-123

6. *Session I: Probing low energy and mass scales*

S. Pastor y S. Schönert

5th Neutrino Oscillation Workshop (NOW 2008)

Conca Specchiulla, Otranto (Italia), Septiembre 2008

Nuclear Physics B (Proceedings Supplements) **188** (2009) 371-376

7. *Collective flavor transitions of supernova neutrinos*  
G. Sigl, R. Tomàs, A. Esteban-Pretel, S. Pastor, A. Mirizzi, G.G. Raffelt y P.D. Serpico  
5th Neutrino Oscillation Workshop (NOW 2008)  
Conca Specchiulla, Otranto (Italia), Septiembre 2008  
Nuclear Physics B (Proceedings Supplements) **188** (2009) 101-106
8. *Spontaneous R-parity violation and the origin of neutrino mass*  
A. Vicente  
Symposium on Prospects in the Physics of Discrete Symmetries (DISCRETE 08)  
Valencia, Diciembre 2008  
Journal of Physics: Conference Series **171** (2009) 012073
9. *Modelling tri-bimaximal neutrino mixing*  
S. Morisi  
Symposium on Prospects in the Physics of Discrete Symmetries (DISCRETE 08)  
Valencia, Diciembre 2008  
Journal of Physics: Conference Series **171** (2009) 012069
10. *Long-lived slepton in the coannihilation region and measurement of lepton flavour violation at LHC*  
S. Kaneko, J. Sato, T. Shimomura, O. Vives y M. Yamanaka  
Symposium on Prospects in the Physics of Discrete Symmetries (DISCRETE 08)  
Valencia, Diciembre 2008  
Journal of Physics: Conference Series **171** (2009) 012092
11. *SNO, KamLAND and neutrino oscillations:  $\theta_{13}$*   
G.L. Fogli, E. Lisi, A. Marrone, A. Palazzo, A.M. Rotunno  
XIII International Workshop on Neutrino Telescopes  
Venecia (Italia), Marzo 2009  
Publicado en las Actas, ed. M. Baldo Ceolin (University of Padova, 2009), p. 81
12. *Cosmological Probes of Neutrino Masses*  
S. Pastor  
International School of Physics "Enrico Fermi", CLXX Course: Measurements of neutrino mass  
Varenna (Italia), Junio 2008  
Publicado en las Actas, ed. F. Ferroni, F. Vissani & C. Brofferio (Società Italiana di Fisica, 2009), p. 187-214

### Cursos impartidos

1. *Cosmología de neutrinos (4 horas)*  
S. Pastor  
Facultad de Ciencias, Univ. de Buenos Aires (Argentina), Febrero 2009
2. *Light neutrinos in Cosmology (4 horas)*  
S. Pastor  
ISAPP 2009: Cosmic Microwave Background and Fundamental Interaction Physics  
Como (Italia), Julio 2009

3. *Cosmic Rays (1 hora)*

S. Pastor

3rd UniverseNet School on Particle Physics and Cosmology

Univ. Autònoma Barcelona, Bellaterra, Octubre 2009

**Seminarios impartidos**

- *Neutrino physics and discrete symmetries*

S. Morisi

Turín (Italia), 6 Febrero 2009

- *Collective neutrino flavor transformations in supernovae*

S. Pastor

IFT Madrid, 2 Abril 2009

- *Neutrino masses in R-parity violating supersymmetry*

A. Vicente

IPMU, Univ. de Tokio, Kashiwa (Japón), 20 Mayo 2009

- *Neutrino oscillations phenomenology and implications for  $\theta_{13}$*

A. Palazzo

Univ. Viena (Austria), 4 Junio 2009

- *Double beta decay: Status and perspectives*

M. Hirsch

Niigata (Japón), 11 Agosto 2009

**Tesis doctorales**

- *Supernovae com a laboratoris de propietats de neutrins*

Andreu Esteban Pretel

Universidad de Valencia

Fecha lectura: 13 Julio 2009