

## Memoria Grupo AHEP 2007

Componentes del Grupo durante todo o parte del año 2007:

José W.F. Valle, Nuria Rius, Martin Hirsch, Sergio Pastor, Ricard Tomàs, Gennaro Miele, D.P. Roy, Satoru Kaneko, Stefano Morisi, Diego Aristizábal, Enrico Borriello, Andreu Esteban, Urbano França, Teguayco Pinto, Avelino Vicente, Antonio Palazzo, Albert Villanova, Massimiliano Lattanzi y Federica Bazzocchi, + colaboradores externos.

### (0) Organización de conferencias y participación en comités

- *Workshop on Neutrino Physics: Looking Forward*  
Aspen (Estados Unidos), 28 Mayo-10 Junio 2007  
**J.W.F. Valle**, coorganizador
- *International School on Astro-Particle Physics, European Doctorate School*  
Seillac (Francia), 4-15 Junio 2007  
**J.W.F. Valle** en el Comité Científico Internacional
- *Segunda reunión de la RED NAcional Temática de Astropartículas (RENATA 07)*  
Valencia, 17-19 Septiembre 2007  
**J.W.F. Valle** en el Comité Organizador

### (1) Artículos publicados en revistas indexadas ISI en 2007

1. *Minimal supergravity threshold effects on the tri-bimaximal neutrino mixing pattern*  
**M. Hirsch**, E. Ma, J.C. Romão, **J.W.F. Valle** y **A. Villanova del Moral**  
Physical Review D **75** (2007) 053006 [arXiv: hep-ph/0606082]
2. *Thermal leptogenesis in extended supersymmetric seesaw*  
**M. Hirsch**, **J.W.F. Valle**, M. Malinsky, J.C. Romão y U. Sarkar  
Physical Review D **75** (2007) 011701 [arXiv: hep-ph/0608006]
3. *Ultrahigh Energy Neutrinos in the Mediterranean: Detecting  $\nu_\tau$  and  $\nu_\mu$  with a  $km^3$  Telescope*  
A. Cuoco, G. Mangano, G. Miele, **S. Pastor**, L. Perrone, O. Pisanti y P.D. Serpico  
Journal of Cosmology and Astroparticle Physics **0702** (2007) 007 [arXiv: astro-ph/0609241]
4. *Flavor Symmetry and Vacuum Aligned Mass Textures*  
**S. Kaneko**, H. Sawanaka, T. Shingai, M. Tanimoto y K. Yoshioka  
Progress of Theoretical Physics **117** (2007) 161-181 [arXiv: hep-ph/0609220]
5. *Decay of Charged Higgs boson in TeV scale supersymmetric seesaw model*  
G.C. Cho, **S. Kaneko** y A. Omote  
Physics Letters B **652** (2007) 325-330 [arXiv: hep-ph/0611240]
6. *Soft leptogenesis in the inverse seesaw model*  
J. Garayoa, M.C. González-García y **N. Rius**  
Journal of High Energy Physics **0702** (2007) 021 [arXiv: hep-ph/0611311]

7. *Probing the internal solar magnetic field through g-modes*  
T.I. Rashba, **V.B. Semikoz**, S. Turck-Chièze y **J.W.F. Valle**  
Monthly Notices of the Royal Astronomical Society **377** (2007) 453-458 [arXiv: astro-ph/0611728]
8. *Just so Higgs boson*  
**F. Bazzocchi**, M. Fabbrichesi y P. Ullio  
Physical Review D **75** (2007) 056004 [arXiv: hep-ph/0612280]
9. *Model for fermion masses and lepton mixing in  $SO(10) \times A_4$*   
**S. Morisi**, M. Picariello y E. Torrente-Luján  
Physical Review D **75** (2007) 075015 [arXiv: hep-ph/0702034]
10. *Predictive flavour symmetries of the neutrino mass matrix*  
**M. Hirsch**, A.S. Joshipura, **S. Kaneko** y **J.W.F. Valle**  
Physical Review Letters **99** (2007) 151802 [arXiv: hep-ph/0703046]
11. *Flavor Symmetry and Vacuum Aligned Mass Textures*  
**S. Kaneko**, H. Sawanaka, T. Shingai, M. Tanimoto y K. Yoshioka  
International Journal of Modern Physics E **16** (2007) 1427-1436 [arXiv: hep-ph/0703250]
12. *Quark masses and mixings in  $E_6 \times S_3$ : A Monte Carlo approach*  
**S. Morisi**  
International Journal of Modern Physics A **22** (2007) 2921-2933
13. *Probing non-standard neutrino interactions with supernova neutrinos*  
**A. Esteban-Pretel**, **R. Tomàs** y **J.W.F. Valle**  
Physical Review D **76** (2007) 053001 (arXiv: 0704.0032 [hep-ph])
14. *Insensitivity of leptogenesis with flavor effects to low energy leptonic CP violation*  
S. Davidson, J. Garayoa, F. Palorini y **N. Rius**  
Physical Review Letters **99** (2007) 161801 (arXiv: 0705.1503 [hep-ph])
15. *Decaying warm dark matter and neutrino masses*  
**M. Lattanzi** y **J.W.F. Valle**  
Physical Review Letters **99** (2007) 121301 (arXiv: 0705.2406 [astro-ph])
16. *Exact relativistic beta decay endpoint spectrum*  
S.S. Masood, S. Nasri, J. Schechter, M.A. Tórtola, **J.W.F. Valle** y C. Weinheimer  
Physical Review C **76** (2007) 045501 (arXiv: 0706.0897 [hep-ph])
17. *Decoherence in supernova neutrino transformations suppressed by deleptonization*  
**A. Esteban-Pretel**, **S. Pastor**, **R. Tomàs**, G.G. Raffelt y G. Sigl  
Physical Review D **76** (2007) 125018 (arXiv: 0706.2498 [astro-ph])
18. *Natural dark matter in SUSY GUTs with non-universal gaugino masses*  
S.F. King, J.P. Roberts y **D.P. Roy**  
Journal of High Energy Physics **0710** (2007) 106 (arXiv:0705.4219 [hep-ph])
19. *Correlation of the Highest-Energy Cosmic Rays with Nearby Extragalactic Objects*  
The Pierre Auger Collaboration [incluye a **S. Pastor** y **T. Pinto**]  
Science **318** (2007) 938-943 (arXiv:0711.2256 [astro-ph])

(1b) Preprints (todavía sin publicar en 2007)

1. *Lepton asymmetries and the growth of cosmological seed magnetic fields*  
**V.B. Semikoz y J.W.F. Valle**  
arXiv: 0704.3978 [hep-ph]
2. *Variations on leptogenesis*  
**D. Aristizábal Sierra**, M. Losada y E. Nardi  
arXiv: 0705.1489 [hep-ph]
3. *Astrophysical interpretation of the medium scale clustering in the ultrahigh energy sky*  
A. Cuoco, **G. Miele** y P.D. Serpico  
arXiv: 0706.2864 [astro-ph]
4. *Fermion masses, Leptogenesis and Supersymmetric  $SO(10)$  Unification*  
J.C. Romão, M.A. Tórtola, **M. Hirsch y J.W.F. Valle**  
arXiv: 0707.2942 [hep-ph]
5. *A SUSY  $A_4$  model for fermion masses and mixings*  
**F. Bazzocchi, S. Kaneko y S. Morisi**  
arXiv: 0707.3032 [hep-ph]
6. *High energy neutrino yields from astrophysical sources II: Magnetized sources*  
M. Kachelriess, S. Ostapchenko y **R. Tomàs**  
arXiv: 0708.3047 [astro-ph]
7. *CP violation and neutrino oscillations*  
H. Nunokawa, S.J. Parke y **J.W.F. Valle**  
arXiv:0710.0554 [hep-ph]
8. *Embedding  $A(4)$  into left-right flavor symmetry: Tribimaximal neutrino mixing and fermion hierarchy*  
**F. Bazzocchi, S. Morisi** y M. Picariello  
arXiv:0710.2928 [hep-ph]
9. *Angular Signatures of Annihilating Dark Matter in the Cosmic Gamma-Ray Background*  
A. Cuoco, J. Brandbyge, S. Hannestad, T. Haugbølle y **G. Miele**  
arXiv:0710.4136 [astro-ph]
10. *Leptoquarks: Neutrino masses and accelerator phenomenology*  
**D. Aristizábal Sierra, M. Hirsch** y S.G. Kovalenko  
arXiv:0710.5699 [hep-ph]
11. *Disentangling neutrino-nucleon cross section and high energy neutrino flux with a  $km^3$  neutrino telescope*  
**E. Borriello**, A. Cuoco, G. Mangano, **G. Miele, S. Pastor**, O. Pisanti y P.D. Serpico  
arXiv:0711.0152 [astro-ph]
12. *Constraining Non-Standard Neutrino-Electron Interactions*  
J. Barranco, O.G. Miranda, C.A. Moura y **J.W.F. Valle**  
arXiv:0711.0698 [hep-ph]

13. *Mu-tau neutrino refraction and collective three-flavor transformations in supernovae*  
**A. Esteban-Pretel, S. Pastor, R. Tomàs**, G.G. Raffelt y G. Sigl  
arXiv:0712.1137 [astro-ph]
14. *Probing a Supersymmetric Model for Neutrino Masses at Ultrahigh Energy Neutrino Telescopes*  
**M. Hirsch, D.P. Roy y J.W.F. Valle**  
arXiv:0712.1711 [hep-ph]
15. *Probing bilinear R-parity violating supergravity at the LHC*  
F. de Campos, O.J.P. Eboli, M.B. Magro, W. Porod, D. Restrepo, **M. Hirsch y J.W.F. Valle**  
arXiv:0712.2156 [hep-ph]

## (2) Ponencias y comunicaciones a congresos

1. *Neutrinos and Cosmology*  
S. Pastor  
Neutrino Mass Measurements and their Implications  
Durham (Reino Unido), Enero 2007
2. *Supernova Neutrino Sensitivity to Non-Standard Neutrino Interactions* (Póster)  
A. Esteban-Pretel  
Joint Indo-German School And Workshop 2007: Neutrinos in Physics, Astrophysics and  
Cosmology  
Mumbai (India), Febrero 2007
3. *High energy neutrinos from astrophysical sources: a self-consistent approach*  
R. Tomàs  
Joint Indo-German School And Workshop 2007: Neutrinos in Physics, Astrophysics and  
Cosmology  
Mumbai (India), Febrero 2007
4. *Precise calculation of the relic neutrino density*  
S. Pastor  
Joint Indo-German School And Workshop 2007: Neutrinos in Physics, Astrophysics and  
Cosmology  
Mumbai (India), Febrero 2007
5. *Dark energy and neutrino mass*  
U. França  
Workshop “Excursions in the Dark”  
Perimeter institute, Waterloo (Canadá), Mayo 2007
6. *Neutrinos as Messengers in Astroparticle Physics*  
J.W.F. Valle  
Physics of the Universe confronts observations  
París (Francia), Mayo 2007
7. *Neutrino mass models*  
M. Hirsch

- Int. Workshop on the Golden Channel at a Neutrino Factory  
IFIC Valencia, Junio 2007
8. *Constraints on non-standard neutrino interactions*  
N. Rius  
Int. Workshop on the Golden Channel at a Neutrino Factory  
IFIC Valencia, Junio 2007
  9. *Non-standard neutrino interactions in cosmology*  
S. Pastor  
Int. Workshop on the Golden Channel at a Neutrino Factory  
IFIC Valencia, Junio 2007
  10. *Effects of non-standard neutrino-electron interactions on relic neutrino decoupling*  
T. Pinto  
13th Int. Symposium on Particles, Strings and Cosmology (PASCOS 07)  
Londres (Reino Unido), Julio 2007
  11. *Neutrinos: from Heaven to Earth and back*  
J.W.F. Valle  
Physics of Massive Neutrinos, Joint Annual Meeting of N4 IDEA and N6/WP1 ENTApP  
Blaubeuren (Alemania), Julio 2007
  12. *High energy neutrinos from astrophysical sources: a self-consistent approach*  
R. Tomàs  
ICRC 07  
Mérida (México), Julio 2007
  13. *Cosmological probes of the neutrino mass: current constraints and future sensitivities*  
S. Pastor  
NuMass workshop  
Génova (Italia), Julio 2007
  14. *Decay of Charged Higgs boson in TeV scale supersymmetric seesaw model*  
S. Kaneko  
15th International Conference on Supersymmetry and the Unification of Fundamental Interactions (SUSY 2007)  
Karlsruhe (Alemania), Julio 2007
  15. *Predictive flavour symmetries of the neutrino mass matrix*  
S. Kaneko  
Summer Institute 2007  
Fuji-yoshida (Japón), Agosto 2007.
  16. *Neutrinos as messengers*  
J.W.F. Valle  
Workshop on The Path to Neutrino Mass  
Aarhus (Dinamarca), Septiembre 2007

17. *Cosmological neutrinos and Big Bang Nucleosynthesis: PArthENoPE code*  
G. Miele  
Workshop on The Path to Neutrino Mass  
Aarhus (Dinamarca), Septiembre 2007
18. *SUSY Search at Future Collider and Dark Matter Experiments*  
D.P. Roy  
Annual meeting of the Dark Matter theory part of ENTApP  
Matalascañas, Huelva, Septiembre 2007
19. *Astroparticle physics at AHEP*  
Second Annual meeting of the *REd Nacional Temática de Astropartículas (RENATA 07)*  
M. Hirsch  
Valencia, Septiembre 2007
20. *Common Research Activity on Cosmic Rays between Valencia and Naples*  
Second Annual meeting of the *REd Nacional Temática de Astropartículas (RENATA 07)*  
G. Miele  
Valencia, Septiembre 2007
21. *Neutrino mixing with a non-abelian discrete symmetry in  $SO(10)$*   
Second Annual meeting of the *REd Nacional Temática de Astropartículas (RENATA 07)*  
S. Morisi  
Valencia, Septiembre 2007
22. *Supernova Neutrinos: A Phenomenological Overview*  
Second Annual meeting of the *REd Nacional Temática de Astropartículas (RENATA 07)*  
R. Tomàs  
Valencia, Septiembre 2007
23. *Neutrino oscillations; present understanding and the future challenges*  
J.W.F. Valle  
3rd International Workshop on a Far Detector in Korea for the J-PARC Neutrino Beam  
Tokio (Japón), Septiembre 2007
24. *Sensitivity of leptogenesis with flavour effects to low energy observables*  
N. Rius  
Annual meeting of the *Red Nacional Temática de Neutrinos*  
Barcelona, Octubre 2007
25. *Present understanding of neutrino oscillations*  
J.W.F. Valle  
Workshop on Next Generation Nucleon Decay and Neutrino Detectors (NNN07)  
Hamamatsu (Japón), Octubre 2007

### **(3) Proceedings publicados**

1. A. Villanova  
*Production and decays of supersymmetric Higgs bosons in spontaneously broken R-parity*

- 14th International Conference on Supersymmetry and the Unification of Fundamental Interactions (SUSY 2006)  
Irvine (Estados Unidos), Junio 2006  
AIP Conference Proceedings **903** (2007) 137-140
2. R. Tomàs  
*Identifying the neutrino mass hierarchy with supernova neutrinos*  
IPM School and Conference on Lepton and Hadron Physics (IPM-LHP06)  
Teheran (Irán), Mayo 2006  
Contribución publicada en los Proceedings
3. S. Pastor  
*Precision cosmology and neutrinos*  
Neutrino Oscillation Workshop (NOW 2006)  
Otranto (Italia), Septiembre 2006  
Nuclear Physics B (Proceedings Supplements) **168** (2007) 17-22
4. J.W.F. Valle  
*Concluding talk at NOW 2006*  
Neutrino Oscillation Workshop (NOW 2006)  
Otranto (Italia), Septiembre 2006  
Nuclear Physics B (Proceedings Supplements) **168** (2007) 413-422
5. O.G. Miranda, M.A. Tórtola y J.W.F. Valle  
*Robustness of solar neutrino oscillations in the presence of non-standard physics*  
VI Simposio Latinoamericano de Física de Altas Energías (SILAFEA)  
Puerto Vallarta (México), Noviembre 2006  
AIP Conference Proceedings **917** (2007) 100-107
6. S. Pastor  
*Cosmology and neutrino masses*  
VI Simposio Latinoamericano de Física de Altas Energías (SILAFEA)  
Puerto Vallarta (México), Noviembre 2006  
AIP Conference Proceedings **917** (2007) 108-115
7. M. Kachelriess y R. Tomàs  
*High energy neutrinos from optically thick sources*  
VI Simposio Latinoamericano de Física de Altas Energías (SILAFEA)  
Puerto Vallarta (México), Noviembre 2006  
AIP Conference Proceedings **917** (2007) 116-121
8. D.P. Roy  
*SUSY Search in Future Collider and Dark Matter Experiments*  
International Workshop on Theoretical High Energy Physics (IWTHEP 2007)  
Roorkee (India), Marzo 2007  
AIP Conference Proceedings **939** (2007) 63-74
9. T. Pinto  
*Effects of non-standard neutrino-electron interactions on relic neutrino decoupling*

13th Int. Symposium on Particles, Strings and Cosmology (PASCOS 07)  
Londres (Reino Unido), Julio 2007  
AIP Conference Proceedings **957** (2007) 433-436

10. E. Borriello, A. Cuoco, G. Mangano, G. Miele, S. Pastor, O. Pisanti y P.D. Serpico  
*Ultra-high energy neutrinos with a Mediterranean neutrino telescope*  
ICRC 07  
Mérida (México), Julio 2007  
Contribución publicada en los Proceedings
11. R. Tomàs  
*High energy neutrinos from astrophysical sources: a self-consistent approach*  
ICRC 07  
Mérida (México), Julio 2007  
Contribución publicada en los Proceedings

#### (4) Cursos impartidos

1. *Cosmological Aspects of Neutrinos* (3 clases)  
S. Pastor  
Joint Indo-German School And Workshop 2007: Neutrinos in Physics, Astrophysics and  
Cosmology  
21-23 Febrero 2007, Mumbai (India)

#### (5) Seminarios impartidos

- *Neutrino masses and electroweak symmetry breaking*  
F. Bazzocchi  
Univ. de Turín (Italia), 30 Enero 2007
- *Phenomenological Aspects of Supernova Neutrinos*  
R. Tomàs  
Institute of Science, Bangalore (India), 1 Marzo 2007
- *Predictive flavour symmetries of the neutrino mass matrix*  
S. Kaneko  
Ochanomizu Univ. (Japón), Abril 2007
- *High Energy Neutrino Astrophysics*  
R. Tomàs  
NTNU Trondheim (Noruega), 7 Mayo 2007
- *Supernova Neutrinos: A Phenomenological Overview*  
R. Tomàs  
Laboratori Nazionali del Gran Sasso, Assergi (Italia), 21 Junio 2007
- *SUSY Search at Future Collider and Dark Matter Experiments*  
D.P. Roy  
Univ. Granada, 18 Octubre 2007

- *SUSY Search at Future Collider and Dark Matter Experiments*  
D.P. Roy  
Univ. Bonn (Alemania), 29 Octubre 2007
- *SUSY Search at Future Collider and Dark Matter Experiments*  
D.P. Roy  
Univ. Dortmund (Alemania), 30 Octubre 2007
- *SUSY Search at Future Collider and Dark Matter Experiments*  
D.P. Roy  
IFT Madrid, 6 Noviembre 2007
- *Probing non-standard neutrino interactions with supernova neutrinos*  
A. Esteban-Pretel  
CERN, 9 Noviembre 2007
- *Neutrinos as messengers*  
J.W.F. Valle  
Univ. de Turín (Italia), 16 Noviembre 2007
- *Supernova Neutrinos: A Phenomenological Overview*  
R. Tomàs  
DESY, Hamburgo (Alemania), 24 Noviembre 2007
- *SUSY Search at Future Collider and Dark Matter Experiments*  
D.P. Roy  
IFAE Barcelona, 30 Noviembre 2007
- *Supernova Neutrinos: A Phenomenological Overview*  
R. Tomàs  
Univ. de Dortmund (Alemania), 6 Diciembre 2007
- *High energy neutrinos from astrophysical sources: a self-consistent approach*  
R. Tomàs  
MPI für Kernphysik, Heidelberg (Alemania), 10 Diciembre 2007

**(6) Tesis doctorales**

1. *Phenomenology of neutrino mass models*  
Albert Villanova del Moral  
Universidad de Valencia  
Fecha lectura: 11 Enero 2007
2. *Flavour violating signals of neutrino mass models*  
Diego Aristizábal Sierra  
Universidad de Valencia  
Fecha lectura: 28 Junio 2007

**(7) Trabajos de investigación o de máster**

1. *Cosmology with mass-varying neutrinos*  
Urbano Lopes França  
Trabajo de investigación  
Universidad de Valencia  
Fecha lectura: 30 Julio 2007
2. *Origen supersimétrico de la masa del neutrino*  
Avelino Vicente Montesinos  
Tesis de máster  
Universidad de Valencia  
Fecha lectura: 16 Julio 2007