

Curriculum Vitae

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Birth: 19/12/1977, Valencia, Spain.

Present situation: Postdoctoral researcher, U. of Valencia contract
Theoretical Physics Department – IFIC, University of Valencia,

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Studies

- Baccalauréat, (série S, mention Très Bien), Lycée Français de Valence (1995).
 - Degree in Physics at the Faculty of Physics, University of Valencia (1995-2000).
 - Ph.D. in Physics, University of Valencia (05/2005, *Sobresaliente Cum Laude*), interdepartmental program *Física Teórica y Astrofísica* (Theoretical Physics and Astrophysics).
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Grants & other merits

- Collaboration grant “Universidad-Empresa, Fundación ADEIT”, at EISMANN S.A., computing department (07/1998 - 09/1998).
 - Collaboration grant, spanish Ministry of Education for last year students (academic year 1999-2000).
 - Physics Degree Extraordinary Price.
 - CERN Summer Student Programme 2000 (07/2000 - 09/2000).
 - F.P.I. grant, Generalitat Valenciana (regional government), (01/2001 - 03/2001).
 - F.P.U. grant, spanish Ministry of Education, (04/2001 - 12/2004).
 - “Pedagogical Aptitude Course” (CAP) in *Physics and Chemistry* (2000-2001).
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Postdoctoral Contracts

- Postdoctoral researcher, Centro de Física Teórica de Partículas (CFTP), Lisbon (06/2005 - 08/2007).
- Postdoctoral researcher *Marie Curie – ER* (MRTN-CT-2006-035505, *Heptools*), Istituto Nazionale di Fisica Nucleare (INFN) – Sezione di Roma Tre, Rome (10/2007 - 09/2009).
- Postdoctoral researcher, *Juan de la Cierva* program, Theoretical Physics Department, University of Valencia (10/2009 - 9/2012).

Short term academic stays

- Physics Department, Instituto Superior Técnico (Lisbon), 9 weeks, fall 2002.
- Physics Department (Theoretical Physics), University of Oxford, 10 weeks, summer 2003.
- Physics Department (Theoretical Physics), CERN, 9 weeks, summer 2004.

Physics schools

- IX Escuela de Otoño de Física Teórica, 'Información Cuántica', Santiago de Compostela, 09/2001.
 - I Taller de Altas Energías, Peñíscola 04/2002.
 - Physics at colliders, from twistors to Monte Carlos, Turin, 01/2008.
 - MC4LHC workshop: from parton shower to NNLO, CERN, Geneva, 05/2009.
 - Physics at colliders, On the eve of the LHC, Turin, 07/2009.
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Publications (Physics)

- *Unitarity triangles and the search for New Physics*,
F.J. Botella, G.C. Branco, M. Nebot and M.N. Rebelo,
Nucl. Phys. **B651** (2003) 174, preprint [arXiv:hep-ph/0206133](#).
- *The size of $\chi = \arg(-V_{ts}V_{tb}^*V_{cs}^*V_{cb})$ and physics beyond the Standard Model*,
J.A. Aguilar-Saavedra, F.J. Botella, G.C. Branco and M. Nebot,
Nucl. Phys. **B706** (2005) 204, preprint [arXiv:hep-ph/0406151](#).
- *New physics and evidence for a complex CKM*,
F.J. Botella, G.C. Branco, M. Nebot and M.N. Rebelo,
Nucl. Phys. **B725** (2005) 155, preprint [arXiv:hep-ph/0502133](#).
- *CPT violation in entangled $B^0 - \bar{B}^0$ states and the demise of flavour tagging*,
E. Álvarez, J. Bernabéu, N.E. Mavromatos, M. Nebot and J. Papavassiliou,
Phys. Lett. **B607** (2005) 197, preprint [arXiv:hep-ph/0410409](#).
- * (Proceedings) *The Demise of flavor tagging and its Delta-T dependence*,
E. Álvarez, J. Bernabéu and M. Nebot,
proceedings of HEP-EPS 2005, PoS HEP2005 (2006) 252, preprint [arXiv:hep-ph/0512073](#).
- *Invariant approach to flavour-dependent CP-violating phases in the MSSM*,
F.J. Botella, M. Nebot and O. Vives,
JHEP **01** (2006) 106, preprint [arXiv:hep-ph/0407349](#).
- *Δt -dependent equal-sign dilepton asymmetry and CPTV effects in the symmetry of the $B^0 - \bar{B}^0$ entangled state*,
E. Álvarez, J. Bernabéu and M. Nebot,
JHEP **11** (2006) 87, preprint [arXiv:hep-ph/0605211](#).
- *CP violation and limits on New Physics including recent $B(s)$ measurements*,
F.J. Botella, G.C. Branco and M. Nebot,
Nucl. Phys. **B768** (2007) 1, preprint [arXiv:hep-ph/0608100](#).
- *Reparametrization Invariance, the controversial extraction of α from $B \rightarrow \pi\pi$ and New Physics*,
F.J. Botella and M. Nebot, preprint [arXiv:hep-ph/0704.0174](#).
- *Prospects for the Zee-Babu model at the LHC and low energy experiments*,
M. Nebot, J.F. Oliver, D. Palao and A. Santamaría,
Phys. Rev. **D77** 093013 (2008), preprint [arXiv:0711.0483](#).
- *Small violations of unitarity, the phase in $B_s^0 - \bar{B}_s^0$ and visible $t \rightarrow cZ$ decays at the LHC*,
F.J. Botella, G.C. Branco and M. Nebot,
Phys. Rev. **D79** 096009 (2009), preprint [arXiv:0805.3995](#).
- * (Proceedings) *Small violations of 3×3 unitarity, the phase in $B_s^0 - \bar{B}_s^0$ mixing and visible $t \rightarrow cZ$ decays at the LHC*,
F.J. Botella, G.C. Branco and M. Nebot,
J.Phys.Conf.Ser. 171, 012058 (2009).

- *Two-Higgs Leptonic Minimal Flavour Violation*,
F.J. Botella, G.C. Branco, M. Nebot and M.N. Rebelo,
JHEP **10** (2011) 037, preprint [arXiv:1102.0520](#).
 - *The Hunt for New Physics in the Flavour Sector with up vector-like quarks*,
F.J. Botella, G.C. Branco and M. Nebot,
JHEP **1212** (2012) 040, preprint [arXiv:1207.4440](#).
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Other publications (Non Physics)

- *A Network Model for the Correlation between Epistasis and Genomic Complexity*,
R. Sanjuán and M.R. Nebot,
PLoS ONE 3(7) (2008).
 - *Distribution of Fitness Effects Caused by Single-Nucleotide Substitutions in Bacteriophage ϕ 1*,
J.B. Peris, P. Davis, J.M. Cuevas, M.R. Nebot and R. Sanjuán,
Genetics **185**, 603-609 (2010).
 - *Viral mutation rates*,
R. Sanjuán, M.R. Nebot, N. Chirico, L.M. Mansky and R. Belshaw,
Journal of Virology **84** (19), 9733-9748 (2010).
 - *Immune activation promotes evolutionary conservation of T-cell epitopes in HIV-1*,
R. Sanjuán, M.R. Nebot, J.B. Peris and J. Alcamí,
accepted for publication.
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Seminars/Contributions at conferences

- *CPT violation, entangled neutral mesons and the demise of flavour tagging*, IFAE-UAB (Barcelona), 14/01/2005.
- *Invariant approach to flavour-dependent CP-violating phases in the MSSM*, Service de Physique Théorique, Université Libre de Bruxelles, 20/04/2006.
- *Recent B_s measurements, CP violation and limits on New Physics*, CFTP, Lisbon, 19/12/2006.
- *Reparametrization Invariance and the extraction of the weak phase α from $B \rightarrow \pi\pi$* , CFTP, Lisbon, 24/05/2007.
- *Prospects for the Zee-Babu model at the LHC and low energy experiments*, First annual meeting, EU Heptools network, Athens, 27/11/2007.
- *Small violations of 3×3 unitarity, the phase in $B_s^0-\bar{B}_s^0$ mixing and visible $t \rightarrow cZ$ decays at the LHC*, Discrete 08 Symposium, Valencia, 15/12/2008.
- *Up vector-like quarks and New Physics hints*, Second annual meeting, EU Heptools network, Lisboa, 11/03/2009.
- *Small violations of 3×3 unitarity and visible $t \rightarrow cZ$ decays at the LHC*, Top quark physics at the LHC (LIP-CFTP Workshop), Lisbon, 13/03/2009.
- *Overview on vector-like quarks, Unitarity violation, $B_s^0-\bar{B}_s^0$ mixing phase and visible $t \rightarrow cZ$ decays*, Second Workshop on Beyond three generation Standard Model, New Fermions at the Crossroads of Tevatron and LHC, Taipei, 15/01/2010.

- *Vector-like quarks and New Physics at the LHC*, Multi-lepton final states in search of New Physics at the LHC (LIP-CFTP Workshop), Lisbon, 25/03/2010.
- *Prospects on extensions of the Standard Model with vector-like quarks*, Planck 2011, From the Planck scale to the Electroweak scale, Lisbon, 01/06/2011.
- *Model Independent analysis of New Physics after the first LHCb results*, III CPAN days, Barcelona, 02/11/2011.
- *Updated Phenomenology of Vector-Like Quark: preliminary results*, 2nd workshop on Flavor Physics in the LHC era, Valencia, 17/01/2012.
- *Looking for new Vector-Like Quark effects*, XL International Meeting on Fundamental Physics, Benasque, 26/05/2012.
- *Standard Model extensions with vector-like quarks: status and prospects*, Planck 2012: from the Planck scale to the electroweak scale, Warsaw, 30/05/2012.
- *Beyond Standard Model avenues through vector-like quarks*, IVIFCA Workshop, *Theoretical Physics II*, Valencia, 23/11/2012.
- *Flavour fits beyond the Standard Model*, IV CPAN days, Granada, 26/11/2012.
- *Vector-like quarks and New Physics in the flavour sector*, Discrete 2012, Lisbon, 06/12/2012.

Advising activities

- Co-advisor in the Ph.D. thesis of *Antonio Sánchez Puente* (started 11/2010).
 - Directed an “Introduction to research” (JAE-intro) grant from the Spanish National Science Council (CSIC) for undergraduate students (summer 2011, student *Joaquín Santos Blasco*).
 - Directed a collaboration grant for last year undergraduate students from the Spanish Ministry, academic year 2011-2012 (student *Joaquín Santos Blasco*).
 - Directed the degree thesis of *Joaquín Santos Blasco*, “CP violation and matter–antimatter asymmetry”, 2012.
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Teaching

- Quantum Physics (Problems), 22.5 hours, 2002-2003.
 - Quantum Physics (Problems), 45 hours, 2003-2004.
 - Mechanics and Waves (Theory + Problems), 45 hours, 2009-2010.
 - Oscillations and Waves (Theory + Problems), 52 hours, 2010-2011.
 - Oscillations and Waves (Theory + Problems), 59 hours, 2011-2012. A sample of the teaching material (lecture notes and videos) is available at http://ific.uv.es/~nebot/Oscilaciones_y_Ondas/ (in spanish).
 - *Teaching assitant* at the postgraduate school *Taller de Altas Energías 2012*, (Universidad Complutense, Madrid, July 2012).
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Languages: Spanish (mother tongue), French (read, write and speak: fluent), English (read, write and speak: fluent), Italian (read and speak: fluent, write: regular), Portuguese (poor).
