

Curriculum vitae - Alfredo Aranda
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Workplace info

Current position: VP for Research at the University of Colima
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Positions held

VP for Research, CGIC, Universidad de Colima; February 2013 - present
Chair, Facultad de Ciencias, Universidad de Colima; Nov. 2011 - Jan. 2013.
Interim Chair, Facultad de Ciencias, Universidad de Colima; October 2009 - 2010
Profesor Titular B, Universidad de Colima, February 2012 - presente
Profesor Titular A, Universidad de Colima, February 2003 - January 2012
SNI member, Level 3 (2011 - present)
Adjunct Professor, University of Texas at El Paso, 2005 - 2010
Jr. Research Associate, International Center for Theoretical Physics, June 2006 - 2011
Chair, Facultad de Ciencias, Universidad de Colima; November 2004 - April 2007
Research Associate, Boston University, August 2001 - December 2002

Academic degrees

Ph. D.
Ph.D. in Physics, May 2001, College of William and Mary, USA
M.Sc

Master in Science, May 1998, College of William and Mary, USA

B.Sc

Bachelor of Science, May 1996, University of Texas at El Paso, USA

Thesis supervision

Graduate level

- (Ph.D.): Francisco José de Anda Navarro - *Explorando modelos más allá del Modelo Estándar*, Universidad de Guadalajara, 2015.
- (Ph.D.): Alfonso Díaz Furlong - *Physics Beyond the Standard Model in the Randall-Sundrum Geometry*, Benemérita Universidad Autónoma de Puebla, 2012.
- (Ph.D.): Alma Dolores Rojas Pacheco, *Representaciones tensoriales 45 - dimensionales en modelos SUSY - GUT*, Benemérita Universidad Autónoma de Puebla, 2010.
- (M.Sc.): César M. Bonilla Díaz *Simetras Abelianas de Sabor en Modelos con Tres Dobleces de Higgs*, Benemérita Universidad Autónoma de Puebla, 2013.
- (M.Sc.): J. Alberto Acosta López, *Rompimiento de la simetría continua $SU(2)$ hacia el grupo discreto no abeliano Q_4* , Universidad Autónoma de Zacatecas, 2012.
- (M.Sc.): Enrique Díaz Méndez, *Electroweak Scale Neutrinos*, University of Texas at El Paso, 2009.
- (M.Sc.): Eric Sánchez, *Electroweak symmetry breaking and extra dimensions*, University of Texas at El Paso, 2007.
- (M.Sc.): José Valadéz, *Model of neutrino masses in extra dimensions*, University of Texas at El Paso, 2005.
- (Ph.D.): J. Francisco De Anda - In process - Universidad de Guadalajara.
- (Ph.D.): Enrique Díaz - In process - Benemérita Universidad Autónoma de Puebla.

Undergraduate

- (B.Sc.): Jorge A. Torres Espinosa, *Breve introducción al Modelo Estándar de física de partículas*, Universidad de Colima, 2015

- (B.Sc.): Manuel A. Buen Abad Nájjar, *Gauge-Higgs Unification*, Universidad de Colima, 2013
- (B.Sc.): Francisco Berúmen Murillo, *Higgs vs No-Higgs en el Modelo Estndar*, Universidad de Zacatecas, 2012
- (B.Sc.): José Andrés Sepúlveda Quiroz, *Encontrando vértices en eventos neutrino-núcleo para el experimento NOνA*, - Universidad de Colima, 2011.
- (B.Sc.): Raymundo Alberto Ramos Anguiano, *Mezcla tribimaximal de neutrinos*, Universidad de Colima, 2010.
- (B.Sc.): Arturo González Alatorre, *Interferometría de piones*, Universidad de Colima, 2009.
- (B.Sc.): Mónica Felipa Ramírez Palacios, *Física de Neutrinos*, Universidad de Guadalajara, 2009.
- (B.Sc.): Francisco José de Anda Navarro, *Electroweak Scale neutrinos and Decaying Dark Matter*, Universidad de Guadalajara, 2009.
- (B.Sc.): Salvador Zamudio Barajas, *Producción de Higgs en colisiones e^+e^-* , 2008.
- (B.Sc.): Clayma Mayeli Barajas Valezco, *Majorana Vs Dirac: Procesos fundamentales de los neutrinos de Majorana*, 2006.

Scientific production

900+ cites as of February 2015 (INSPIRE).

Selected publications

- *Maximal Neutrino Mixing from a Minimal Flavor Symmetry*, A. Aranda, C.D. Carone, R.F. Lebed, Phys. Rev. **D62**, 016009 (2000).
- *U(2) Flavor Physics without U(2) Symmetry*, A. Aranda, C.D. Carone, R.F. Lebed, Phys. Lett. **B474**, pp. 170-176 (2000).
- *Neutrino mixing from the double tetrahedral group T'*, Alfredo Aranda; Physical Review **D76**, 111301(R) (2007).
- *Three generations of Higgses and the cyclic groups*, Alfredo Aranda, Cesar Bonilla, J. L. Díaz-Cruz; Physics Letters B 717, pp. 248-251 (2012)

- *Neutrino masses generation in a Z_4 model*, Alfredo Aranda, Cesar Bonilla. Alma D. Rojas; Physical Review D 85, 036004 (2012)
- *Non-diagonal charged lepton mass matrix and non-zero θ_{13}* , J. Alberto Acosta, Alfredo Aranda, Manuel A. Buen-Abad, Alma D. Rojas; Physics Letters B 718, pp. 1413-1420 (2013)

Research articles

1. *A new radiative neutrino mass generation mechanism with higher dimensional scalar representations and custodial symmetry*, Alfredo Aranda, Eduardo Peinado. *Physics Letters B* 754 (2016), 11-13
2. *Electroweak phase transition in a model with gauged lepton number*, Alfredo Aranda, Enrique Jimnez, Carlos A. Vaquera-Araujo. *JHEP* 01 (2015) 070
3. *CP violating phase from charged-lepton mixing*, J. Alberto Acosta, Alfredo Aranda, Julio Virrueta. *JHEP* 04 (2014) 134
4. *Dirac neutrinos from flavor symmetry*, Alfredo Aranda, Cesar Bonilla, S. Morisi, E. Peinado, J. W. F. Valle. *Physical Review D* 89, 033001 (2014)
5. *Higgs decay into two photons from a 3HDM with flavor symmetry*, Alfredo Aranda, Cesar Bonilla, Francisco de Anda, Antonio Delgado, Jaime Hernandez-Snchez. *Physics Letters B* 725 (2013), pp. 97-100
6. *Non-diagonal charged lepton mass matrix and non-zero θ_{13}* , J. Alberto Acosta, Alfredo Aranda, Manuel A. Buen-Abad, Alma D. Rojas; *Physics Letters B* 718, pp. 1413-1420 (2013)
7. *Three generations of Higgses and the cyclic groups*, Alfredo Aranda, Cesar Bonilla, J. L. Díaz-Cruz; *Physics Letters B* 717, pp. 248-251 (2012)
8. *Z_4 flavor model in Randall-Sundrum model 1*, Carlos Alvarado, Alfredo Aranda, Olindo Corradini, Alma D. Rojas, Eli Santos-Rodrguez; *Physical Review D* 86, 036010 (2012)
9. *Neutrino masses generation in a Z_4 model*, Alfredo Aranda, Cesar Bonilla, Alma D. Rojas; *Physical Review D* 85, 036004 (2012)
10. *Model of flavor with quaternion symmetry*, Alfredo Aranda, Cesar Bonilla, Raymundo Ramos, Alma D. Rojas; *Physical Review D* 84, 016009 (2011).
11. *Constraints on realistic Gauge-Higgs unified models*, Alfredo Aranda, Jos Wudka; *Physical Review D* 82, 096005 (2010)
12. *Dark Left-Right Gauge Model: $SU(2)_R$ Phenomenology*, Alfredo Aranda, J. Lorenzo Daz-Cruz, Jaime Hernandez-Snchez, Ernest Ma; *Physical Review D* 81, 075010 (2010)
13. *Electroweak scale neutrinos and decaying dark matter*, Alfredo Aranda and Francsico J. de Anda; *Physics Letters B* 683 183 - 185 (2010)
14. *Asymmetric Higgs Sector and Neutrino Mass in an $SU(2)_R$ Model*, Alfredo Aranda, J. Lorenzo Diaz-Cruz, Ernest Ma, Roberto Noriega, and Jose Wudka; *Phys. Rev. D* **80**, 115003, (2009)

15. *Anomalies, Beta Functions and Supersymmetric Unification with Multi-Dimensional Higgs Representations*, Alfredo Aranda, J. L. Daz Cruz, Alma D. Rojas; Phys. Rev. D **80**, 085027 (2009)
16. *Implications of the discovery of a Higgs triplet on electroweak right-handed neutrinos*, Alfredo Aranda, J. Hernández-Sánchez and P.Q Hung; JHEP11 (2008) 092.
17. *A Model of Neutrino and Higgs Physics at the Electroweak Scale*, Alfredo Aranda, Omar Blanno and J. L. Diaz-Cruz; Physics Letters B 660, 62-66 (2008).
18. *Neutrino mixing from the double tetrahedral group T'* , Alfredo Aranda; Physical Review **D76**, 111301(R) (2007).
19. *Fundamental and composite scalars from extra dimensions*, Alfredo Aranda, J. L. Diaz-Cruz, J. Hernández Sánchez, R. Noriega-Papaqui; Physics Letters B 658 (2007) 57-63.
20. *Electroweak-Higgs Unification and the Higgs Boson Mass*, A. Aranda, J.L. Diaz-Cruz, A. Rosado; Int. J. of Mod. Phys. **A22**, No. 7 1417-1440 (2007).
21. *Comment to "Quantization of FRW spacetimes in the presence of a cosmological constant and radiation"*, Paolo Amore, Alfredo Aranda, Mayra Cervantes, J. L. Díaz-Cruz, Francisco M. Fernández; Phys. Rev. **D75** 068503 (2007).
22. *Gauge Higgs unification with brane kinetic terms*, A. Aranda and J.L. Díaz-Cruz; Phys. Lett. **B633** pp. 591 - 594 (2006).
23. *A new approximation method for time-dependent problems in quantum mechanics*, P. Amore, A. Aranda, F. Fernández, H. Jones; Phys. Lett. **A 340** pp. 87-93 (2005).
24. *Improved Lindstedt-Poincare method for the solution of nonlinear problems*, P. Amore and A. Aranda; Journal of Sound and Vibration 283/3-5 pp. 1111-1132 (2005).
25. *Systematic perturbation calculation of integrals with applications to physics*, P. Amore, A. Aranda, F.M. Fernández, R.A. Sáenz; Phys. Rev. E. **71**, 016704 (2005).
26. *Flavor Symmetries in Extra Dimensions*, A. Aranda and J.L. Diaz-Cruz; Mod. Phys. Lett. A. Vol. 20, No. 3, pp. 203-212 (2005).
27. *Comparative study of quantum anharmonic potentials*, P. Amore, A. Aranda, A. De Pace, J. López; Phys. Lett. **A329/6** pp 451-458 (2004).

28. *A new method for the solution of the Schrodinger equation*, P. Amore, A. Aranda, A. De Pace; J. Phys. A: Math. Gen. **37**, pp 3515-35 (2004).
29. *Presenting a new method for the solution of nonlinear problems*, P. Amore and A. Aranda; Physics Letters **A316** pp. 218-225 (2003).
30. *Where is the Higgs Boson?*, A. Aranda, C. Balazs, J. L. Díaz-Cruz; Nuclear Physics **B670**, pp 90-102 (2003).
31. *Pion Dispersion Relation at Finite Density and Temperature*, A. Ayala, P. Amore, A. Aranda, Phys. Rev. **C66**, 045205 (2002).
32. *$U(2)$ -like Flavor Symmetries and Approximate Bimaximal Neutrino Mixing*, A. Aranda, C.D. Carone, P. Meade, Phys. Rev. **D65**, 013011 (2002).
33. *Orthogonal $U(1)$'s, Proton Stability and Extra Dimensions*, A. Aranda and C.D. Carone, Phys. Rev. **D63**, 075012 (2001).
34. *Bounds on Bosonic Topcolor*, A. Aranda and C.D. Carone, Phys. Lett. **B488**, pp. 351-358 (2001).
35. *Generations of Higgs Bosons in Supersymmetric Models*, A. Aranda and M. Sher, Phys. Rev. **D62**, 092002 (2000).
36. *Maximal Neutrino Mixing from a Minimal Flavor Symmetry*, A. Aranda, C.D. Carone, R.F. Lebed, Phys. Rev. **D62**, 016009 (2000).
37. *$U(2)$ Flavor Physics without $U(2)$ Symmetry*, A. Aranda, C.D. Carone, R.F. Lebed, Phys. Lett. **B474**, pp. 170-176 (2000).
38. *Limits on a Light Leptophobic Gauge Boson*, A. Aranda and C.D. Carone, Phys. Lett. **B443**, pp. 352-358 (1998).
39. *Preferred Modes of Decay in Nuclear Fragmentation*, A. Aranda, J.A. Lopez, Z. Wu, Phys. Rev. **C55**, 788 (1997).
40. *Cross Comparisons of nuclear temperatures determined from excited state populations and isotope yields*, M.B. Tsang, F. Zhu, W.G. Lynch, A. Aranda, D.R. Bowman, R.T. de Souza, C.K. Gelbke, Y.D. Kim, L. Phair, S. Pratt, C. Williams, H.M. Xu, Phys. Rev. **C53**, R1057 (1996).
41. *A Study of Fluctuations in Nuclear Fragmentation*, A. Aranda, C.O. Dorso, V. Furci, J.A. Lopez, Phys. Rev. **C52**, 3217 (1995).

Participation as reviewer/referee for:

1. *Physical Review Letters*
2. *Physical Review D*
3. *Proceedings of the Royal Society A*
4. *Revista Mexicana de Física*
5. *SIGMA Journal*
6. CONACYT
7. The National Science Foundation

Research grants

1. Proyecto CONACYT CB-2011-167425 (PI): *Física del sabor más allá del Modelo Estándar*, 2011 - 2014. Monto: \$900,000.00
2. PROMEP - Red temática *Física del Higgs y del Sabor*, 2012 - 2013. Monto :\$120,000.00
3. Proyecto CONACYT de Estancia de Consolidación en la Universidad Autónoma de Chiapas, Solicitud 145378, 2010 - 2013. Monto: \$ 300,000.00
4. Proyecto UCMEXUS-CONACYT CN08-205 (Co-PI): *Probando la rotura de las simetrías de sabor y electrodébil en el LHC*, 2008 - 2009. Monto: \$ 250,000.00
5. Proyecto PROMEP (PI): *Términos cinéticos de brana y fenomenología electrodébil*, 2004 - 2005. Monto: \$ 230,000.00
6. Proyecto CONACYT C02-44950 (PI): *Fenomenología del Higgs, Rompimiento de Simetría, y Dimensiones Extras*, 2004 - 2007. Monto: \$ 262,000.00
7. Proyecto Alvarez Buylla de la Universidad de Colima (PI): *Física de dimensiones extras*, 2003 - 2004. Monto: \$50,000.00

References

1. Prof. Jose Valle - IFIC-Valencia (jose.valle at ific.uv.es, tel. +34 963544459)
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