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CURRICULUM VITAE

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Place of Birth: Santiago, Chile
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Studies and Degrees:

Mechanical Engineering

Federico Santa María Technical University, Valparaíso, Chile (1956–1961)

Degree: Mechanical Engineer (with highest honors, 1963).

Physics

University of Virginia, Charlottesville, Virginia, USA (1963–1967)

Academic Degree: Doctor of Philosophy (Ph.D.) (1967).

Prizes and Honors:

1. *Fundación Benigno Polanco* Prize to the best Mechanical Engineer graduated in 1961.
2. Member of *Sigma Xi*.
3. Member of the *Raven Society*, Honorary Society of the University of Virginia.
4. Associate member of the *Centro Atómico Bariloche* (1986–).
5. *Critics Prize, international category*, awarded by the Valparaíso Arts Critics Circle, for the Exposition *Estética en las Ciencias*.

6. Fellow of the American Physical Society (1993).
7. Full Member of the "Academia de Ciencias del Instituto de Chile" (1994).
8. Medal for Distinguished Professional Trajectory, Universidad Técnica Federico Santa María (2007).
9. Rector's Medal, Universidad de Chile (2007).
10. National Science Prize for the Exact Sciences 2007.

Professional Experience:

1. Temporary Professor, Naval Engineering School, Valparaíso, Chile (1960).
2. Research Associate, Institute of Physics, Faculty of Engineering, Universidad de Chile (1962–1963).
3. Research Associate, Institute of Sciences, Universidad de Chile (1963–1965).
4. Research Associate, Department of Physics, University of Virginia, USA (June–August, 1967).
5. Visiting Scientist, Department of Physics, University of California, Berkeley, USA, (September–December, 1967).
6. Senior Scientist, Faculty of Sciences, Universidad de Chile (1968–1974).
7. Professor, Universidad Nacional de Ingeniería, Lima, Perú (February and March, 1971).
8. Professor, University of California, San Diego, USA (1973–1974).
9. Professor, Universidad Simón Bolívar, Caracas, Venezuela (1974–1976).
10. Scientist, Max Planck Institut, Stuttgart, Federal Republic of Germany (July 1975).
11. Professor, Universidad Simón Bolívar, Caracas, Venezuela (1977–1983).
12. Professor, Universidad of California, Berkeley, USA (1980–1981).
13. Professor, Universidad Autónoma de Madrid, Spain, (June, 1981).
14. Professor, Pontificia Universidad Católica de Chile, (1983–).
15. Professor (part time), Faculty of Sciences, Universidad de Chile, (1986–).

Positions held:

1. Chairman, Department of Physics, Faculty of Sciences, Universidad de Chile (1969–1970).
2. Member of the Directive Board of the *Sociedad Chilena de Física (SOCHIFI)*, (1969–1974).
3. Member of the Advisory Committee for Solid State Physics of the *Centro Latinoamericano de Física (CLAF)*, (1971–1986).
4. Member of the Directive Board of the *Centro Latinoamericano de Física (CLAF)*, (1972–1987).
5. Director of Undergraduate Studies, Faculty of Physics, Universidad Católica, (1984–1987).
6. Vice–President of the Directive Board of the *Centro Latinoamericano de Física (CLAF)*, (1986–1987).
7. President of the *Sociedad Chilena de Física (SOCHIFI)*, (1987–1988).
8. Member of the Council of the *Inter–American Conferences on Physics Education*.
9. Member of the Scientific Committee of the *International Centre of Condensed Matter Physics, University of Brasilia, Brasil* (1988–).
10. Member of the International Advisory Committee of *Statphys 17*, (1989).
11. Director of Research and Graduate Studies, Faculty of Physics, Universidad Católica, (1989–1991).
12. Member of the International Committee of the *International Conference on Strongly Correlated Electron Systems*, San Diego, California, USA, August 1993.
13. Member of the Directive Board of the *Centro Latinoamericano de Física (CLAF)*, (1994–1998).
14. President of the Directive Board of the *Centro Latinoamericano de Física (CLAF)*, (1996–1998).
15. Chairman, Department of Physics, Faculty of Physics, Pontificia Universidad Católica de Chile, (1996–2000).

16. Member of the Governing Board of the *Sociedad Chilena de Física (SOCHIFI)*, (2008–2010).

Scholarships and Fellowships:

1. *Organización de Estados Americanos* Scholarship (1963–1965).
2. *Dupont* Scholarship (1965–1967).
3. *University of Chile–University of California Cooperative Agreement* (1967).
4. *Institute of International Education (IEE)* Scholarship (1973).
5. *John Simon Guggenheim Memorial Foundation* Fellowship (1973–1974).
6. *Andes Foundation* Sabbatical Fellowship (1990).

Publications:

1. "Ultrahigh Vacuum Systems", thesis submitted to the Universidad Técnica Federico Santa María in partial fulfillment of the requirements for a Mechanical Engineering Degree (1963).
2. "The Ehrenfest Urn", *Scientia* **32**, 67 (1966).
3. "Resonance Scattering in Superconductors: finite temperature properties", (with M. J. Zuckermann), *Bulletin of the American Physical Society* **12**, 57 (1967).
4. "The Effect of Resonance Scattering and d-d Correlations on the Thermodynamic Properties of Superconducting Alloys", (with M. J. Zuckermann), *Phys. Letters* **24A**, 456 (1967).
5. "Resonance Scattering in Superconducting Alloys", thesis submitted to the University of Virginia in partial fulfillment of the requirements for a Doctors Degree (Ph.D.) (1967).
6. "The Effect of Correlations on the Thermodynamic and Transport Properties of Superconducting Alloys", (with M. J. Zuckermann), *Phys. Rev.* **164**, 548 (1967).
7. "Resonance Scattering and Spatial Variation of the Order Parameter in Superconducting Alloys", (with N. Majlis), *Phys. Rev.* **B3**, 2962 (1971).
8. "Localized Spin Fluctuations in Dilute Alloys: Renormalization, Degeneracy and Impurity Effects", (with R. Ferrer and M. J. Zuckermann), *Phys. Letters* **34A**, 339 (1971).
9. "Linear Chain with Free End Boundary Conditions", (with J. Rössler), *American Journal of Physics* **40**, 143 (1972).
10. "Electronic Phase Transitions in $Ce_{1-x}La_x$ Alloys", (with R. Ramírez), *Phys. Rev. Letters* **28**, 344 (1972).
11. "Effect of Superconductivity on the formation of Localized Magnetic Moments", (with J. Rössler), *Phys. Letters* **38A**, 371 (1972).
12. "Electronic Phase Transitions of Cerium Metal", (with R. Ramírez), *Phys. Rev.* **B6**, 3700 (1972).

13. "Fermi Surface Geometry and the Antiferromagnetic Phase of Europium Metal", (with M. P. Greene), *Solid State Commun.* **10**, 717 (1972).
14. "More on the Electronic Phase Transition of $Ce_{1-x}La_x$ Alloys", (with R. Ramírez), *Phys. Rev.* **B7**, 4745 (1973).
15. "Pressure-Temperature Phase Diagram of $Ce_{1-x}La_x$ ", (with M. Plischke, R. Ramírez and M. J. Zuckermann), *J. Phys. F: Metal Phys.* **3**, 1746 (1973).
16. "Susceptibility of the Mattis Model", (with R. Ramírez y J. Rössler), *Phys. Rev.* **B8**, 2379 (1973).
17. "A Model of the Fermi Surface for Antiferromagnetic Europium Metal", (with M. P. Greene), *Solid State Commun.* **13**, 541 (1973).
18. "The Proximity Effect for Weak Itinerant Ferro- and Antiferro-Magnets", (with M. J. Zuckermann), Proc. of the 19-th Conf. on Magnetism and Magnetic Materials, **18**, 347 (1973).
19. "Localized Spin Fluctuations in Superconducting Alloys", (with J. Rössler), *Solid State Commun.* **15**, 1581 (1974).
20. "Effect of Localized Spin Fluctuations on Superconducting Properties of Dilute Alloys", (with J. Rössler), *Phys. Rev.* **B10**, 95 (1974).
21. "Friction Coefficient of an Adsorbed H-Atom on a Metal Surface", (with K.P. Bohnen and H. Suhl), *Phys. Rev. Letters* **34**, 1512 (1975).
22. "Charge Oscillations Caused by Isoelectronic Impurities", (with R. Ferrer and M. J. Zuckermann), *Phys. Stat. Sol. (b)* **72**, K5 (1975).
23. "A new Interpretation for Nuclear Magnetic Relaxation Data of a Nickel-based Alloy", (with B. Chornik and M. J. Zuckermann), *J. Phys. F: Metal Phys.* **6**, 2419 (1976).
24. "Physical Approach to the $H \rightleftharpoons H + H$ reaction: ion coefficient calculation", (with K. P. Bohnen and H. Suhl), *Phys. Rev.* **B15**, 5657 (1977).
25. "Effects of overlap and next-nearest-neighbor interactions in tight-binding calculations", (with R. Ramírez, A. Trias and F. Yndurain), *Phys. Rev.* **B17**, 3063 (1978).
26. "The Superconducting critical temperature of Radiation Damaged A-15 Compounds", (with R. Ramírez and M. J. Zuckermann), *Solid State Commun.* **26**, 497 (1978).

27. "Rigorous bounds for the Helmholtz free energy of the Falicov-Kimball model", (with A. Trias and R. Ramírez), *Phys. Rev. B***19**, 5877 (1979).
28. "Magnitude of Localized Magnetic Moments in Metals", (with E. Pestana and R. Ramírez), *Phys. Stat. Sol. (b)***95**, 497 (1979).
29. "Short-Range order effects on the Electronic properties of a binary linear chain", (with J. Rössler and G. Martínez), *Phys. Rev. B***21**, 5511 (1980).
30. "Exact Ground-State Behavior of a Four-Atom Generalized Hubbard Model", (with J. Rössler and B. Fernández), *Phys. Rev. B***24**, 5299 (1981).
31. "Antiferromagnetism, projected Density of State and the Bogoliubov Transformation for Bosons", (with Tsung-han Lin and L. M. Falicov), *Phys. Rev. B***25**, 432 (1982).
32. "Thin Ferromagnetic Films on Non-Magnetic Metallic substrates: A Model Calculation", (with G. J. Mata and E. Pestana), *Phys. Rev. B***26**, 3841 (1982).
33. "On the Reconstructions of the Density of States from its Moments", (with A. Trias and M. Weissmann), *Phys. Rev. B***28**, 1859 (1983).
34. "Short Range Order Effects and the Falicov-Kimball Model", (with G. Martínez and J. Rössler), *Solid State Commun.* **53**, 827-830 (1985).
35. "On the Theory of Temper Embrittlement", (with G. Martínez and R. Ramírez), *Acta Metallurgica* **34**, 1583 (1986).
36. "Mixed Valence as a Polaronic Effect", (with M. Lagos), *J. of Physics and Chemistry of Solids* **48**, 1309-1315 (1987).
37. "Random Chains and Complex Transfer Matrix Attractors", (with J. Rössler and G. Martínez), *Solid State Commun.* **61**, 395-400 (1987).
38. "Populations under Periodically and Randomly Varying Growth Conditions", (with M. Markus, B. Hess and J. Rössler) in *Chaos in Biological Systems*, H. Degn, A. Holden, L. F. Olsen, editors (Plenum Press, London, 1987), pp. 267-277.
39. "Large Quantum Number State and the Correspondence Principle", (with G. G. Cabrera), *Phys. Rev. (Rapid Commun.)* **A36**, 2995-2998 (1987).
40. "Dynamics of Biosystems under Oscillating external conditions: effects of Superstable behaviour", (with M. Markus, B. Hess and J. Rössler), 9th International Biophysics Congress, Jerusalem, Israel, (August 1987).

41. "Effects of Periodic and Random Excitations of Simple Dynamic Systems", (with M. Markus, B. Hess and J. Rössler) in *Spatial Inhomogeneities and Transient Behavior in Chemical Kinetics*, G. Nicolis and P. Gray, editors (Manchester University Press, 1988).
42. "Ecosystems under Varying Ambient Conditions", (with J. Rössler and M. Markus) in *From Chemical to Biological Organization*, Vol. 39, M. Markus, S. C. Muller and G. Nicolis, editors (Springer Verlag, Berlin, 1988), pp. 319–330.
43. "Dynamic Symmetry Breaking in Mixed Valence Systems", (with B. Alascio, C. Balseiro, G. Ortíz and M. Lagos), *Phys. Rev. B***38**, 4698-4704 (1988).
44. "The Ground State of the Heisenberg Antiferromagnetic Chain in the Quasi-Ising Limit", (with M. Lagos, E.R. Gagliano and G. G. Cabrera), *Solid State Commun.* **67**, 225-228 (1988).
45. "High Correlation Regime of the Hubbard Model", (with M. Lagos and R. Ramírez), *Solid State Commun.* **67**, 763-766 (1988).
46. "Anisotropic Heisenberg Antiferromagnet with Arbitrary Dimensionality", (with G.G. Cabrera and M. Lagos), *Solid State Commun.* **68**, 743-746 (1988).
47. "New analytic approach to Mott insulators", (with M. Lagos), in *Progress in High Temperature Superconductivity*, Vol. 9, R. Nicolsky, R.A. Barrio, O.F. de Lima and R. Escudero (World Scientific, Singapur, 1988), pp. 429-432.
48. "Two-dimensional Heisenberg antiferromagnet: analytic and numeric results", (with M. Lagos, E.R. Gagliano and G.G. Cabrera), *Solid State Commun.* **70**, 431-435 (1989).
49. "Modulated nonlinear processes and a novel mechanism to induce chaos", (with J. Rössler, B. Hess and M. Markus), *Phys. Rev.* **A39**, 5954–5960 (1989).
50. "Magnetic metal films on paramagnetic substrates: a theoretical study", (with D. Altbir, G. Martínez and M.J. Zuckermann). *Phys. Rev.* **B40**, 6963 (1989).
51. "Periodically and randomly modulated non linear processes", (with B. Hess, M. Markus and J. Rössler), in *Instabilities and Nonequilibrium Structures*, E. Tirapegui and D. Villarroel, editors (Reidel Publishing Co., Dordrecht, Holland, 1989), pp. 67–74.

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53. "Impurity-induced grain-boundary embrittlement: A simple three-dimensional model", (with G. Martínez). *Phys. Rev. B***42**, 5527–5538 (1990).
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55. "Electron-phonon coupling in mixed valence systems", (with M. Rivas and J. Rössler), *Phys. Rev. B***43**, 3593–3600 (1991).
56. "Electron-Lattice Interactions in $S_{m_{1-x}}Y_xS$ like Systems", (with M. Rivas y J. Rössler), *Physica B***171**, 91–97 (1991).
57. "Effect of a resonant periodic perturbation on nonlinear processes", (with J. Rössler y E. Lazo), in *Proceedings of the Second Latin American Workshop on Nonlinear Phenomena* (Elsevier, North Holland, 1991), editors P. Cordero and B. Nachtergaele, pp. 419–433.
58. "Magnetostructural Characterization of a Monohydroxo-bridged, 1,1,2,2-Tetrakis (2-pyridyl)ethylene-bridged Copper(II) Dimer", (with E. Spodine, J. Manzur, M.T. Garland, O. Peña, D. Grandjean and L. Toupet), *J. Chem. Soc. Dalton Trans.*, 365–369 (1991).
59. "Roughening and Discreteness Effects on the Structure of Magnetic Layers", (with D. Altbir), *Solid State Commun.* **82**, 413-418 (1992).
60. "A simple molecular dynamics model of interface amorphization", (with M. Weissmann and R. Ramírez), *Phys. Rev. B***46**, 2577–2583 (1992).
61. "Magnetic coupling between thin film layers", (with D. Altbir), in *Magnetism, magnetic materials and their applications*, F. Leccabue and J.L. Sánchez Llamazares, editors (IOP, Bristol, 1992) pp. 231–233.
62. "Arnold tongues in a periodically perturbed logistic oscillator", (with E. Lazo, and J. Rössler), in *Instabilities and Nonequilibrium Structures IV*, editors E. Tirapegui and W. Zeller (Kluwer Academic Publishers, Netherlands, 1993) pp. 47–52.
63. "A gauge theory approach to a generalized Hubbard Model", (with L. Huerta), *Solid State Commun.* **89**, 444 (1993).

64. "Magnetic multilayers: A detailed analysis of continuum *versus* discrete treatments", (with D. Altbir), *J. of Appl. Phys.* **75**, 3193–3195 (1994).
65. "Interface amorphization: a molecular dynamics approach", (with Sebastián Gonçalves and Ricardo Ramírez), *J. Phys.: Condensed Matter* **6**, 4213–4224 (1994).
66. "Magnetization patterns of exchange coupled metallic multilayers", (with D. Altbir), *New Trends in Magnetism, Magnetic Materials, and Their Applications*, J. L. Morán-López and J. M. Sánchez, editors (Plenum Press, New York, USA, 1994) pp. 111–117.
67. "Cellular Automata for the Order-Disorder Transition", (with J. Palandi, R. M. C. de Almeida and R. Iglesias), in *Chaos, Fractals and Solitons* **6**, 441 (1995).
68. "The dipolar interaction and its interplay with interface roughness", (with Dora Altbir, Ricardo Ramírez and Iván K. Schuller), *Journal of Magnetism and Magnetic Materials* **149**, L246 (1995).
69. "On the relation of roughness and the dipolar interaction", (with Dora Altbir, Ricardo Ramírez and Iván K. Schuller), *Surfaces Vacuum, and their Applications*, I. Hernández-Calderón y René Asomoza, editors (AIP Press, Conference Proceedings 378, NY, USA, 1996) pp. 515–519.
70. "Amorphization in the vicinity of a grain boundary: a molecular dynamics approach", (with Gonzalo Gutiérrez and Ricardo Ramírez), *Phys. Rev.* **B54**, 11701 (1996).
71. "Transport Properties of Co-Ni Superlattices", (with Mariana Weissmann, Ana María Llois and Ricardo Ramírez), *Phys. Rev.* **B54**, 15 335 (1996).
72. "Model Hamiltonian for the conductivity oscillations of magnetic multilayers", (with Ana María Llois, Ricardo Ramírez y Mariana Weissmann), *Phys. Rev.* **B55**, 14 117 (1997).
73. "Analytic solution of a semi-classical Heisenberg model with long range interactions on a Bethe lattice", (with José Rogan), *Phys. Rev.* **B55**, 14397–14407 (1997).
74. "Molecular dynamics study of physisorbed Xenon on Al(110)", (with Sebastián Gonçalves and Ricardo Ramírez), *Solid State Commun.* **104**, 559 (1997).

75. "Temperature induced disorder in β -Zirconium", (with Gonzalo Gutiérrez and Ricardo Ramírez), *Rev. Mex. Física* **44**, 62 (1998).
76. "Conductivity Oscillations of Magnetic Multilayers", (with Ana María Llois, Ricardo Ramírez and Mariana Weissmann), in *Current Problems in Condensed Matter*, J. L. Morán-López, editor (Plenum Press, New York, USA, 1998) pp. 227–238.
77. "Exchange Bias Theory for a Compensated AF Interface", (with José Mejía-López, Ruben D. Portugal and Ricardo Ramírez), *Contribuciones Científicas y Tecnológicas* **121**, 57 (1998).
78. "Electronic versus Phononic Friction of Xenon on Silver", (with A. Liebsch and S. Gonçalves), *Phys. Rev.* **B60**, 5034 (1999).
79. "Theory of Exchange Bias in Fe/FeF₂ bilayers", **Invited Paper**, *Bulletin of the American Physical Society* **44**, 1547 (1999).
80. "Exchange Bias Model for Fe/FeF₂: Role of Domains in the Ferromagnet", (with José Mejía-López, Ruben D. Portugal and Ricardo Ramírez), *Europhysics Letters* **48**, 573 (1999).
81. "Exchange Bias Systems with Compensated Interfaces", (with José Mejía-López, Ruben D. Portugal and Ricardo Ramírez), *Applied Physics Letters* **75**, 3995 (1999).
82. "Positive Exchange Bias Model: Fe/FeF₂ and Fe/MnF₂ bilayers", (José Mejía-López, Ruben D. Portugal and Ricardo Ramírez), *Solid State Commun.* **116**, 315 (2000).
83. "Coercivity of a percolative magnetic system", (with José Mejía-López, Ricardo Ramírez, Michael J. Pechan, J. Zachary Hilt, S. Kim, Harry Suhl and Ivan K. Schuller), *Phys. Rev.* **B63**, 060401 (2001).
84. "Spin-wave theory analytic solution of a Heisenberg model with RKKY interactions on a Bethe lattice", (with José Rogan), *Solid State Commun.* **118/9**, 485 (2001).
85. "Calculation of the interface exchange coupling constants between Fe and FeF₂ like fluorides", (with Mariana Weissmann and Ana María Llois), *Journal of Magnetism and Magnetic Materials*, **234/1**, 19 (2001).
86. "Exchange Bias Theory (Topical Review)", *Journal of Magnetism and Magnetic Materials*, **234/3**, 584 (2001).

87. "Monte Carlo simulation of a two-dimensional magnetic foam", (with J. R. Iglesias, O. A. Nagel and Sebastian Gonçalves), *Journal of Magnetism and Magnetic Materials*, **226-230**, 548 (2001).
88. "Percolation and magnetism: Interplay and relevance", (with José Mejía-López, Ivan K. Schuller and Harry Suhl), *Journal of Magnetism and Magnetic Materials*, **226-230**, 626 (2001).
89. "Exchange Bias Theory: The Role of Interface Structure and of Domains in the Ferromagnet", (with José Mejía-López, Ruben D. Portugal and Ricardo Ramírez), in *Physics of Low Dimensional Systems*, J. L. Morán-López, editor (Kluwer Academic Press, New York, USA, 2001) pp. 295–299.
90. "Modeling Two Dimensional Magnetic Domain Patterns", (with J. R. Iglesias, S. Gonçalves and O. A. Nagel), *Phys. Rev. B* **65**, 064447 (2002).
91. "Electronic Properties of Disilane: an *ab initio* Calculation", (with A. H. Romero and Ricardo Ramírez), *Physica Statu Solidi (b)* **230**, 391 (2002).
92. "Analytic treatment of the Incomplete Ferromagnetic Domain-Wall Model for Exchange Bias", (with José Mejía-López and Ricardo Ramírez), *Journal of Magnetism and Magnetic Materials*, **416**, 364 (2002).
93. "Is NMR the tool to characterize the structure of C₂₀ isomers?", (with A. H. Romero, Daniel Sebastiani and Ricardo Ramírez), *Chem. Phys. Lett.* **366**, 134 (2002).
94. "Internal Rotation of Disilane and Related Molecules: a Density Functional Study", (with F. Valencia, A. H. Romero, R. Ramírez and A. Toro-Labbé), *Chem. Phys. Lett.* **371**, 267 (2003).
95. "La física de la materia condensada en América Latina: nacimiento, desarrollo y situación actual", (with R. Escudero), *Rev. Española de Física* **17-2**, 50 (2003).
96. "Origin of the Magnetic Proximity Effect", *Materials Research Society Symposium Proceedings*, **746**, 1-11 (2003).
97. "Density Functional Theory Study of the Si₂H_{6-x}F_x Series of Molecules", (with F. Valencia, A. H. Romero, R. Ramírez and A. Toro-Labbé), *Chem. Phys. Lett.* **372**, 815 (2003).
98. "Rearrangement collisions between gold clusters", (with J. Rogan, R. Ramírez and A. H. Romero), *Eur. Phys. Jour. D* **28**, 219 (2004).

99. "Structural similarities between Ti metal and titanium oxides: implications on high-pressure behavior of oxygen in metallic matrices", (with A. Vegas, J. Mejía-López, A. H. Romero, D. Santa-María-Pérez and V. G. Baonza), *Solid State Sciences* **6**, 809 (2004).
100. "Ab Initio study of cubyl chains and networks", (with F. Valencia, A. H. Romero, R. Ramírez and A. Toro-Labbé), *Journal of Chemical Physics* **121**, 9172 (2004).
101. "Theoretical study of carbon coated iron nanowires", (with M. Weissmann, G. García, R. Ramírez), *Phys. Rev. B (Rapid Commun.)* **70**, 201401 (2004).
102. "Monte Carlo simulations of exchange bias of ferromagnetic thin films on FeF₂ (110)", (with D. Lederman and R. Ramírez), *Phys. Rev. B* **70**, 184422 (2004).
103. "Polycubanes linked with C₂, N₂, NO and NS: from insulating to metallic behavior", (with F. Valencia, A. H. Romero, R. Ramírez and A. Toro-Labbé), *Phys. Rev. B* **71**, 033410 (2005).
104. "Magnetic reordering in the vicinity of a ferromagnetic/antiferromagnetic interface", (with P. J. Jensen and H. Dreysee), *European Phys. Journal B* **46**, 541 (2005).
105. "Small Pd clusters: a comparison of phenomenological and ab-initio approaches", (with J. Rogan, G. García, A. Valdivia, W. Orellana, A. H. Romero and R. Ramírez), *Phys. Rev. B* **72**, 115421 (2005).
106. "Nanoscale sliding friction versus commensuration ratio", (with Evy Salcedo Torres, Sebastián Gonçalves, Claudio Scherer), *Phys. Rev. B* **73**, 035434 (2006).
107. "Theoretical study of iron-filled carbon nanotubes", (with M. Weissmann, G. García, R. Ramírez and Chu Chun Fu), *Phys. Rev. B* **73**, 125435 (2006).
108. "Quantum fluctuations and the exchange bias field", (with G. J. Mata, E. Pestana and Hugues Dreyse), *Phys. Rev. B* **74**, 144407 (2006).
109. "Cubane Oligomers: A Density Functional Theory Study", (with Bárbara Herrera, Felipe Valencia, Aldo H. Romero, Ricardo Ramírez and Alejandro Toro-Labbé), *Journal of Molecular Structure: THEOCHEM*, **769**, 183 (2006).
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Journal of Chemical Physics **125**, 214708 (2006).
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Material Science-Poland **24**, 883 (2006).
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 113. "The structure and properties of small Pd clusters", (with J. Rogan, G. García, M. Ramírez, V. Muñoz, J. A. Valdivia, X. Andrade and R. Ramírez),
Nanotechnology, **19**, 205701 (2008).
 114. "Diversity driven unbiased search of minimum energy cluster configurations",
(with J. Rogan, G. García, M. Ramírez, V. Muñoz, J. A. Valdivia, and R. Ramírez),
J. Phys.: Condensed Matter, **21**, 084209 (2009).
 115. "Evaluation of the scientific impact, productivity and biological age based upon the h-index in three Latin American countries: the materials science case", (with A. H. Romero and A. García),
Annals of Physics (Berlin), **18**, 198 (2009).
 116. "Exchange bias of patterned systems: model and numerical simulation",
(with G. García, J. Mejía-López, and R. Ramírez),
Journal of Magnetism and Magnetic Materials, **322**, 3329 (2010).
 117. "Collisions between a single gold atom and a 13 atom gold clusters: an *ab initio* approach", (with F. Muñoz, J. Rogan, G. García, M. Ramírez, J. A. Valdivia and R. Ramírez),
European Journal of Physics D **61**, 87 (2011).
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accepted for publication in *Phys. Rev. B* **83**, 155425 (2011).
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