David **Sierra Porta**, PhD.

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Ocup. actual: Profesor Asociado (Fisica y Ciencia de Datos), Facultad de Ciencias Básicas, Universidad Tecnológica de Bolivar, UTB (utb.edu.co)

Ubicación actual: Cartagena de Indias, Colombia.

Relevant Expertise

Data Science and Modelling: *During my career I have learned techniques to collect, organize and analyze statistical data of various kinds, from the field of social sciences to experimental data associated with physical-natural processes. I have been studying and applying statistics through computational techniques for many years, with extensive experience in support of programming projects and project implementation. Mathematical and inferential modeling of processes and systems in general as well as the use of Machine Learning techniques for the description and prediction of data-driven systems.* **Preparation of accurate and understandable reports:** *I have presented the results of my work in papers in main scientific journals, as well as orally in a variety of settings from national conferences to general audience talks.* **Project Management:** *I have actively participated in the design, development, management, execution and evaluation of research and development projects for companies and academia.* **Teaching at University level:** *I have been teaching at a university for more than 15 years. I have taught a wide variety of students in different courses, ranging from engineering, humanities and pure sciences. I have taught courses in Statistical Mechanics, Quantum Mechanics 1 and 2, Mathematical Methods 1 and 2, Statistics and Probability, Numerical Methods, General Physics, Analytical Mechanics, Modern Physics, Experimental Techniques and Data Science.* **Experimental Physics:** *I have accumulated some experience in the study and characterization of astroparticle flows, as well as in the characterization of particle flow processes on structures and various materials. Understanding of cosmic rays and their interactions and detection by detectors.* **Physics-Mathematics:** *I have expertise in modeling dynamical systems and making use of various techniques to solve such systems. I have been interested in nonlinear dynamical systems describing physical processes and applications, and the resolution methods I have learned have to do with non-standard methods such as modeling by means of theoretical mechanics, use of Ritz's method, OHAM, energy balance method, etc.*

Studies Completed - Academic Training

2016: **Doctor (Ph.D.) en Física Fundamental**.
Universidad de los Andes (ULA). Facultad de Ciencias. Mérida, Venezuela.
- *Modified gravity studies and theories of gravity based on scalar, vector and tensor fields of higher order for the construction of alternative theories of gravity.*
- *Quantum Field Theory - Gravitation and General Relativity*.
- *canonical analysis and duality analysis in field theories.*

2004: **Magister Scientiae (M.Sc.) en Física Fundamental**.
Universidad de los Andes (ULA). Facultad de Ciencias. Mérida, Venezuela.
- *Study of Chern-Simons super-gravity models.*
- *Multi-dimensional super-gravity and quantum field theory*.
- *Dimensional reduction in high-dimensional theories.*

2001: **Licenciado en Matemáticas y Física**.
Universidad del Zulia (LUZ). Maracaibo, Venezuela.
- *Research assistant in mathematics and physics education projects in middle, high school and university education*.
- Assistant of the Laboratory for Physics Teaching of the Faculty of Humanities and Education.
- *Student Trainer and Teaching Assistant in the Department of Mathematics and Physics.*

1995: **Bachelor in Science**. Secondary and Bachelor of Science.
Colegio Marista San Pablo. Machiques, Venezuela.

Networks and Partnerships

- Member of American Physical Society (APS), No 62147697.
- Member of American Statistical Association (ASA), No 29579.
- Member of the INTER-AMERICAN STATISTICAL INSTITUTE (IASI).
- Member of the Colombian Statistical Society (SCE).

Expertise

Ene-2022-Actual: **Associate Professor - Full Time**.
- Universidad Tecnológica de Bolivar. Faculty of Basic Sciences. (https://www.utb.edu.co/).
- Researcher and Professor of the Master courses of Mechanics, Electromagnetism, Thermodynamics and Waves.
- Researcher and Professor of Postgraduate Master Courses in Statistics and Data Science, Data Mining, Machine Learning.

Dic-2021-May-2022: **Senior Data Scientist**.
- Company: DBAccess (https://dbaccess.com/).
- Business Analitics. Data analytics projects for international insurance, contractors, investment, etc. companies. Decision management, modeling, forecasting, visualization for business.
- Information data collection, analyze and accurately interpret the information obtained, prepare reports and reports that allow the visualization of the data in an understandable way to a general public and other information products resulting from data analysis.

Oct/Dic-2021: **Senior Data Analytics Expert**.
- Company: IMMAP-Colombia (https://immap.org/colombia/).
- Name of associated project: Migration of children and adolescents in Latin America, financed by UNICEF.
- To monitor the humanitarian situation of children, adolescents and their families in migration situations in Latin America and the Caribbean with a special focus on the conditions of mobility and access to basic services such as medical care, food and means of subsistence. services such as health care, food and livelihoods, protection, education, shelter, water and sanitation, in order to inform programmatic decisions by UNICEF and its partners.
- Collect data information, analyze and accurately interpret the information obtained, prepare reports and briefs that allow the visualization of the data in a way that is understandable to a general audience and other information products resulting from the analysis of the data.

Sep/Nov-2021: **Professor-Chair**.
- Facultad de Ciencias. Universidad Industrial de Santander. Departamento de Física. Bucaramanga, Santander - Colombia. (https://www.uis.edu.co/).
- Professor of Mathematical Modeling II (Graduate, Master's Degree in Applied Mathematics) and Computational Tools (Undergraduate).

2020-2022: **Fellow Research Postdoctoral Position**.
- Nombre del proyecto asociado: Dark Energy Spectroscopic Instrument (DESI).
- Departamento de Física. Universidad de los Andes, Colombia.
- Estudio y análisis de datos del proyecto DESI https://www.desi.lbl.gov/. Trabajando en grupos de trabajo en el área de datos, BGS (Bright Galaxy Survey).

2020-2022: **Master Professor**.
- Facultad de Ciencias. Universidad de los Andes. Departamento de Física. Bogotá, Colombia.
- Professor of the Master courses of Electromagnetism and Thermodynamics.

2019-2020: **Professor-Chair**
- Facultad de Ciencias. Universidad Industrial de Santander. Departamento de Física. Bucaramanga, Santander - Colombia.
- Professor of Electromagnetism and Physics courses.

2018-2019: **Academic Staff - Research Associate**.
- Project name: Research Associate on Muon Tomography.
- Department of Physics and Astronomy. University of Sheffield. Sheffield, United Kingdom.
- Study and analysis of astroparticle fluxes in volcanic structures for the application of the technique of Volcanic Muongraphy (Muon Tomography applied to Colombian volcanoes).
- Theoretical and experimental studies in the field of astroparticles and characterization of cosmic ray detectors.

2017-2018: **Post-Doctoral Position**.
- Project name: Muon Telescope (MuTe-UIS) for muongraphy of Colombian volcanoes.
- Relativity and Gravitation Research Group (GIRG) and Halley Group of Astronomy and Aerospace Sciences. Industrial University of Santander. School of Physics. Bucaramanga, Colombia.
- Study and analysis of astroparticle fluxes in volcanic structures for the application of the Volcanic Muongraphy technique (Muon tomography applied to Colombian volcanoes).
- Theoretical and experimental studies in the field of astroparticles and characterization of cosmic ray detectors.

2016-2017: **Post-Doctoral Position**.
- Project name: Simulation of scintillators and cherenkov detectors for the muon telescope for volcanic muongraphy, MuTe-UIS.
- Relativity and Gravitation Research Group (GIRG) and Halley Group of Astronomy and Aerospace Sciences. Industrial University of Santander. School of Physics. Bucaramanga, Colombia.
- Study and analysis of astroparticle fluxes in volcanic structures for the application of the Volcanic Muongraphy technique (Muon tomography applied to Colombian volcanoes).
- Theoretical and experimental studies in the field of astroparticles and characterization of cosmic ray detectors.

2016-2017: **Director of the Center for Scientific Modeling, CMC**.
- Facultad Experimental de Ciencias. Universidad del Zulia. Maracaibo, Venezuela.

2008-2018: **Ordinary Active Researcher of the Center for Scientific Modeling, CMC.**.
- Facultad Experimental de Ciencias. Universidad del Zulia. Maracaibo, Venezuela.
- Research in the area of Theoretical Physics and Relativity and Gravitation. Also researcher in the experiments for the study and characterization of the Relampago del Catatumbo, electroatmospheric discharges in the Eastern Coast of Maracaibo Lake, Venezuela.

2004-2015: **Ordinary Active Researcher of the Laboratory of Astronomy and Theoretical Physics, LAFT**.
- Facultad Experimental de Ciencias. Universidad del Zulia. Maracaibo, Venezuela.

2015-2018: **Full Professor-Researcher with Exclusive Dedication**.
- Facultad Experimental de Ciencias. Universidad del Zulia. Departamento de Física. Maracaibo, Venezuela.
- A variety of courses have been taught: Classical Mechanics, Quantum Mechanics, Electromagnetism, General Physics 1, General Physics 2, Modern Physics, Statistics and Probability, Numerical Methods, Mathematical Methods I, Mathematical Methods II, Introduction to the Physics Laboratory, Experimental Techniques for Physicists.

2011-2015: **Professor-Researcher Ordinary Associate Professor with Exclusive Dedication**.
- Facultad Experimental de Ciencias. Universidad del Zulia. Departamento de Física. Maracaibo, Venezuela.
- A variety of courses have been taught: Classical Mechanics, Quantum Mechanics, Electromagnetism, General Physics 1, General Physics 2, Modern Physics, Statistics and Probability, Numerical Methods, Mathematical Methods I, Mathematical Methods II, Introduction to the Physics Laboratory, Experimental Techniques for Physicists.

2009-2011: **Professor-Researcher Ordinary Associate Professor with Exclusive Dedication**.
- Facultad Experimental de Ciencias. Universidad del Zulia. Departamento de Física. Maracaibo, Venezuela.

2007-2009: **Full-Time Professor-Researcher Ordinary Aggregate Professor with Full-Time Dedication**.
- Facultad Experimental de Ciencias. Universidad del Zulia. Departamento de Física. Maracaibo, Venezuela.

2004-2008: **Regular Assistant Professor-Researcher with Part-time Dedication**.
- Departamento de Matemáticas y Física de la Facultad de Humanidades y Educación de la Escuela de Educación. Universidad del Zulia.
- A variety of courses have been taught including General Physics 1-5, Geometry, Linear Algebra, Calculus 1-3, Thermodynamics and Introduction to Physics Laboratory.

2004-2006: **Associate Professor Full Time**.
- Escuela de Ingeniería Industrial. Universidad Rafael Urdaneta (URU). Maracaibo, Venezuela.
- A variety of courses have been taught including General Physics 1, Wave Mechanics, Thermodynamics, Statistics and Probability, and Introduction to the Physics Laboratory.

2005-2008: **Head of the Physics Teaching Laboratory**.
- Departamento de Matemáticas y Física de la Facultad de Humanidades y Educación de la Escuela de Educación. Universidad del Zulia.
- Management for the direction of the teaching laboratories of the School of Humanities and Education of the Universidad del Zulia.

Research Projects

1. Observación solar, clima espacial y ciencia de datos. Medición de la rotación solar a partir de imágenes de cámaras digitales imágenes. David Sierra Porta (Principal Investigator), Yaleidys Paola Hernández Diaz (Co-Principal Investigator). UTB Research Division Internal Call for Proposals. **($35,900,000)**. Grant **INV03CI2205**. Start: may 17, 2022, Finish: january 17, 2023. **Financed**.
2. Cartografía de los estudios migratorios: Análisis de Fuentes Secundarias sobre la Migración en América Latina Y El Caribe a partir de metodologías de Ciencias de Datos. Andy Domínguez Monterrosa (Principal Investigator), David Sierra Porta (Co-Principal Investigator). UTB Research Division Internal Call for Proposals. **($35,900,000)**. Grant **INV03CI2205**. Start: may 17, 2022, Finish: january 17, 2023. **Financed**.
3. Observación solar, clima espacial y ciencia de datos. Estudio estadístico de los parámetros de actividad solar del ciclo solar 24. Jorge Villalba Acevedo (Principal Investigator), David Sierra Porta (Co-Principal Investigator). UTB Research Division Internal Call for Proposals. **($35,900,000)**. Grant **INV03CI2205**. Start: may 17, 2022, Finish: january 17, 2023. **Financed**.
4. Simetría de dualidad para teorías de espín 2 masivas. Principal Investigator. Financiado por la División de Investigación de la Facultad Experimental de Ciencias de la Universidad del Zulia, bajo el código FDI-12-2015.
5. Soluciones de la ecuación de Thomas-Fermi con aproximación de métodos de cálculo variacional. Investigador Principal. Financiado por la División de Investigación de la Facultad Experimental de Ciencias de la Universidad del Zulia, bajo el código RDI-351-2015.
6. Algunos aspectos sobre la dualidad gravitacional. Co-Principal Investigator. Funded by the Research Division of the Experimental Faculty of Sciences of the Universidad del Zulia, under the code RDI-352-2015.
7. Radiación de Cargas Aceleradas. Estudio de la Ecuación de Lorentz-Dirac. Co-Investigador. Funded by the Research Division of the Experimental Faculty of Sciences of the Universidad del Zulia, under the code FDI-25-20010.
8. Cosmología con Campos Escalares y Ecuación de Estado No-Local. Principal Investigator. Funded by the Research Division of the Experimental Faculty of Sciences of the Universidad del Zulia, under the code FDI-30-2009.
9. Estudio Canónico-Dinámico de la Gravedad cuatro (4) dimensional con simetría transversa de Fierz-Pauli. Principal Investigator and Responsible. Registered by the Council of Scientific and Humanistic Development, CONDES, under the code CC-0689-2008.
10. Cosmología con Ecuación de Estado No-Local. Principal Investigator and Responsible. Registered by the Council of Scientific and Humanistic Development, CONDES, under the code CC-0844-2008.

11. Formulación Variacional de Ecuaciones Diferenciales Parciales Estocásticas. Co-Principal Investigator and Responsible. Registered by the Council of Scientific and Humanistic Development, CONDES, under the code DI-FEC-702-2004.

Publications in peer-reviewed journals

Working:

1. Data Science: Modeling of social problems and analysis of international business in the area of finance, insurance, etc.
2. Spatial climate: Studying characteristics and behaviors of solar dynamics and their influence on cosmic ray counts detected at the earth's surface.
3. Muon tomography applied to Colombian volcanoes.
4. Physics-Mathematics: Especially interested in methods for solving differential equations with high degree of nonlinearity. Approximate solutions and exact solutions.

Peer-reviewed journals

See also: GOOGLE SCHOLAR: https://scholar.google.com.co/citations?user=-OInFfYAAAAJ&hl=es

1. J. E. Forero-Romero and D. Sierra-Porta. *On the Convergence of the Milky Way and M31 Kinematics from Cosmological Simulations*. The Astrophysical Journal, Volume 939, Number 1. https://doi.org/10.3847/1538-4357/ac92ea.
2. Sierra-Porta, David, and Andy-Rafael Domínguez-Monterroza. *Linking cosmic ray intensities to cutoff rigidity through multifractal detrented fluctuation analysis.* Physica A: Statistical Mechanics and its Applications 607 (2022): 128159. https://doi.org/10.1016/j.physa.2022.128159.
3. Jesús Peña-Rodríguez, Alejandra Vesga-Ramírez, Adriana Vásquez-Ramírez, Mauricio Suárez-Durán, Ricardo de León-Barrios, David Sierra-Porta, Rolando Calderón-Ardila, Jonathan Pisco-Guavabe, Hernán Asorey, José David Sanabria-Gómez, Luis Alberto Núñez. Muography in Colombia: simulation framework, instrumentation and data analysis. *Journal of Advanced Instrumentation in Science*, 271(1) 1-9 (2022). https://doi.org/10.31526/jais.2022.271.
4. R. de León-Barrios, J. Peña-Rodríguez, J.D. Sanabria-Gómez, A. Vásquez-Ramírez, R. Calderón-Ardila, C. Sarmiento-Cano, A. Vesga-Ramírez, D. Sierra-Porta, M. Suárez-Durán, H. Asorey, and Luis A. Núñez. Muography for the Colombian Volcanoes. *37th International Cosmic Ray Conference (ICRC 2021)*, 8 pages. Proceedings of Science, 2021, PoS(ICRC2021)280. https://doi.org/10.22323/1.395.0280.
5. D. Sierra-Porta. Efficient improvement for the estimation of the surface free energy of asphalt binder using Machine Learning tools. Revista UIS Ingenierías, Vol. 20, n.° 3, pp. 179-188 (2021), https://doi.org/10.18273-revuin.v20n3-2021013
6. A. Vesga-Ramírez and J. D. Sanabria-Gómez and D. Sierra-Porta and L. Arana-Salinas and H. Asorey and V. A. Kudryavtsev and R. Calderón-Ardila and L. A. Núñez. Simulated Annealing for Volcano Muography, arXiv 2005.08295 [physics.geo-ph]. *Journal of South American Earth Sciences* 109, 103248 (2021), https://doi.org/10.1016/j.jsames.2021.103248.
7. Sierra-Porta, D. Analytic Approximations to Liénard Nonlinear Oscillators with Modified Energy Balance Method. *J. Vib. Eng. Technol.* 8, 713–720 (2020). https://doi.org/10.1007/s42417-019-00170-9.
8. Sierra-Porta, D. Hydrogeochemical Evaluation of Water Quality Suitable for Human Consumption and Comparative Interpretation for Water Quality Index Studies. *Environ. Process.* 7, 579–596 (2020). https://doi.org/10.1007/s40710-020-00426-7.
9. A. Vesga-Ramírez, D. Sierra-Porta, J. Pena-Rodriguez, J.D. Sanabria-Gomez, M. Valencia-Otero, C. Sarmiento-Cano, M. Suarez-Duran, H. Asorey, L. A. Nunez. Muon Tomography sites for Colombian volcanoes. *Annals of Geophysics*, 63, 6, VO661, (2020), https://doi.org/10.4401/ag-8353.
10. J. Peña-Rodríguez, J. Pisco-Guabave, D. Sierra-Porta, M. Suárez-Durán, M. Arenas-Flórez, L.M. Pérez-Archila, J.D. Sanabria-Gómez, H. Asorey and L.A. Núñez. Design and construction of MuTe: a hybrid Muon Telescope to study Colombian volcanoes. *Journal of Instrumentation*, Volume 15 (2020). https://doi.org/10.1088/1748-0221/15/09/P09006.
11. Jesús Peña-Rodríguez, Adriana Vásquez-Ramírez, José D. Sanabria-Gómez, Luis A. Núñez, David Sierra-Porta, Hernán Asorey. Calibration and first measurements of MuTe: a hybrid Muon Telescope for geological structures. *36th International Cosmic Ray Conference (ICRC 2019)*, 9 pages. Proceedings of Science, 2019, https://doi.org/10.22323/1.358.0381.
12. Peña Rodríguez, J., Asorey, H., Hernández-Barajas, S., León-Carreño, F., Sierra-Porta, D., and Núñez, L. A. Calibración a nivel de Hardware de un detector Cherenkov de agua (Chitaga) en el arreglo GUANE para estudios de clima espacial. *Scientia Et Technica*, 23(4), 563-568 (2018). https://doi.org/10.22517/23447214.17511.
13. Asorey, H., R. Calderón-Ardila, K. Forero-Gutiérrez, L. A. Nuñez, J. Peña-Rodríguez, J. Salamanca-Coy, D. Sanabria-Gómez, J. Sánchez-Villafrades, and D. Sierra-Porta. MiniMuTe: A muon telescope prototype for studying volcanic structures with cosmic ray flux. *Scientia Et Technica*, 23(3), 386-391 (2018). https://doi.org/10.22517/23447214.17501.
14. Sierra-Porta, D. Cross correlation and time-lag between cosmic ray intensity and solar activity during solar cycles 21, 22 and 23. *Astrophys. Space. Sci.* 363, 137 (2018). https://doi.org/10.1007/s10509-018-3360-8.
15. Sierra-Porta, D. Some Algebraic Approach for the Second Painlevé Equation Using the Optimal Homotopy Asymptotic Method (OHAM). *Numer. Analys. Appl.* 11, 170–177 (2018). https://doi.org/10.1134/S1995423918020076.
16. H. Asorey, R. Calderón-Ardila, C. R. Carvajal-Bohorquez, S. Hernández-Barajas, L. Martínez-Ramírez, A. Jaimes-Motta, F. León-Carreño, J. Peña-Rodríguez, J. Pisco-Guavabe, J.D. Sanabria-Gómez, M. Suárez-Durán, A. Vásquez-Ramírez, K. Forero-Gutiérrez, J. Salamanca-Coy, L. A.

Núñez and D. Sierra-Porta. Astroparticle projects at the Eastern Colombia region: facilities and instrumentation Proyectos en Astropartículas en la región Este de Colombia: iniciativas e instrumentación. *Scientia et Technica* Año XXIII, Vol. 23, No. 03 (2018). Universidad Tecnológica de Pereira. ISSN 0122-1701. https://doi.org/10.22517/23447214.17561.

17. Asorey, H., L. A. Núñez, J. Peña-Rodríguez, P. Salgado-Meza, D. Sierra-Porta, and M. Suárez-Durán. Proyecto RACIMO: desarrollo de una propuesta en torno a uso de las TIC, e-ciencia ciudadana, cambio climático y ciencia de datos. (2017). Primer Encuentro Latinoamericano de eCiencia, San José, del 3 al 5 de julio de 2017.
18. Sierra-Porta, D., Chirinos, M., and Stock, J.. Comparison of solutions to the Thomas-Fermi equation by a direct method and variational calculus. *Revista Mexicana de Física*, 63(4), 333 (2017).
19. Marling Juárez, Xandre Chourio, Joaquín Díaz-Lobatón, Ángel G. Muñoz, David Sierra-Porta, Gabriel A. Vecchi. (2017). El Niño, vientos de bajo nivel y predicción de rayos en el norte de Sudamérica. Boletín Técnico. Generación de información y monitoreo del Fenómeno El Niño. Instituto Geofísico del Perú (IGP). Vol 4, 11, 4-7. Instituto Geofísico del Perú (IGP).
20. Sierra-Porta, D., and Núnez, L. On the polynomial solution of the first Painlevé equation. *Int J Appl Math Res*, 6(1), 34 (2017).
21. Sierra Porta, D., Chirinos, M., and Stock, M. J. Comparison of variational solutions of the Thomas-Fermi model in terms of the ionization energy. *Revista mexicana de física*, 62(6), 538-542 (2016).
22. Khoudeir, A., and Sierra, D. Duality invariance in massive theories. *Physical Review D*, 91(6), 064015 (2015), https://doi.org/10.1103/PhysRevD.91.064015.
23. A Khoudeir y David Sierra Porta. DUALIDAD PARA ESPÍN 2 MASIVO. *Acta Cientifica Venezolana* 66 (3), 121-127 (2015)
24. Caldera, J. G., Porta, D. S., and Guerrero, C. Cosmología con campos escalares y ecuación de estado no-local (EEnL). *Ciencia*, 21(1) (2013).
25. Franceschini, P., González, L., Muñoz, Á., Sierra Porta, D., and Soldovieri, T. Effective potential for non-coupled stochastic partial differential equations. *Ciencia*, 16(3) (2010).
26. Muñoz, S., Sierra Porta, D., Soldovieri, T., Montiel, D., Rodríguez, R. O., Toro-Mendoza, J., and Rivero, L. Verhulst's Lagrangean and self-regulated systems. *Revista mexicana de física*, 52, 116-118 (2006).
27. Porta, David Sierra, and Germain Montiel. A note on the magnetic spherical pendulum. *Ciencia 17*, no. 4, 299-304 (2009).
28. Muñoz S, Á. G., Ojeda, J., Sierra P, D., and Soldovieri, T. LETTER TO THE EDITOR: Variational and potential formulation for stochastic partial differential equations. *JPhA*, 39(4), L93-L98 (2006).

Books

1. Técnicas experimentales para físicos: Una introducción a las ciencias físicas. David Sierra Porta. Editorial Académica Española (November 22, 2011). Spanish, 104 pages. ISBN-10: 9783846561072, ISBN-13: 978-3846561072. https://www.amazon.com/T%C3%A9cnicas-experimentales-para-f%C3%ADsicos-introducci%C3%B3n/dp/384656107X.
2. Matemáticas básicas 1. David Sierra Porta. En producción 2021.
3. Estadística y probabilidad. David Sierra Porta. En producción 2021.

Thesis Tutoring

1. Co-Director of Master's Thesis: Inversion geofisica a partir de datos de datos de muongrafia volcanica para proyecto MuTe. Maestría en Geofísica. Universidad Industrial de Santander. 2016. Thesis writer: Maria Alejandra Vesga Ramirez.
2. Undergraduate Thesis Tutor: Soluciones semi-exactas a la Ecuación de Thomas-Fermi. Thesis writer: Br. María Chirinos. Licenciado en Física. Facultad Experimental de Ciencias. La Universidad del Zulia. Mayo de 2016.
3. Master's Thesis Tutor: Soluciones esféricamente simétricas de las ecuaciones de Einstein + términos no-polinomiales y su efecto en la geometría del espacio-tiempo. Thesis writer: Guerrero Ruíz, Jefferson José. Magister Scientiarum en Física. Facultad Experimental de Ciencias. La Universidad del Zulia. Enero de 2011.
4. Master's Thesis Tutor: Cosmología con campos escalares y ecuación de estado Nolocal. Thesis writer: José Gerardo Caldera. Magister Scientiarum en Física. Facultad Experimental de Ciencias. La Universidad del Zulia. Marzo de 2010.
5. Master's Thesis Tutor: Estudio teórico de un péndulo esférico bajo la acción de un campo magnético tipo monopolo. Thesis writer: Montiel Cubillan, Germain Andrés. División de Estudios de Postgrado de la Facultad de Ingeniería. Universidad del Zulia. Postgrado en Física Aplicada. Facultad de Ingeniería. Diciembre 2007.

Interests

- Data Science, Computational Tools of Data Science, Scientific Visualization.
- Mathematical Physics, Mathematical Methods, Experimental Physics, Modeling of Natural Phenomena, Data Science, Data Analysis, General Relativity. Gravitation and Cosmology. Analytical Mechanics.
- Teaching at middle school, high school, diversified, professional, secondary and high school levels. Teaching and research in university higher education.
- Outdoor sports, running, cycling, etc.

Skills

Computer Science Python, R, Maple, Mathematica Software, SPSS, PSPP, Origin, LaTeX, OverLeaft, OpenOffice, Excel-Microsoft, Word-Microsoft, Linux, Microsoft Windows, Gimp, Kadabra.
Communication More than 20 publications in indexed and refereed journals (publications attached). Oral presentation in congresses and events through conferences.
Teaching at different levels of secondary and university education. Group management and excellent command of skills for communication and administration of learning processes.
Theoretical Physics. Experience in tensor calculus and techniques in General Relativity and Cosmology. Study of systems and theories in Quantum Field Theory in several dimensions. Study of systems in the context of theoretical mechanics and theoretical physics in general.

Languages

Spanish: Native proficiency, Native Language
English: Upper intermediate level in verbal communication, writing and reading.
Galego: Limited proficiency.

Professional References

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