

Quevedo Hernando

Position: Full Profesor (Universidad Nacional Autónoma de México)

Adjunct Professor (ICRANet)

Period covered: December 2009 – October 2010



I. Scientific Work

Topics

- Exterior and interior solutions of Einstein's equations and applications in relativistic astrophysics.
- Investigation of the minimum size of astrophysical compact objects.
- The physics of naked singularities.
- Geometrothermodynamics of black holes.
- Topological quantization of classical mechanics and classical field theories.

II. Conferences and educational activities

II a. Conferences and Other External Scientific Works

Cosmology on the Beach "Essential Cosmology for the Next Generation", Playa del Carmen, Mexico, January 2010.

19th International Conference on General Relativity and Gravitation, Mexico City, July 2010.

XIV Brazilian School of Cosmology and Gravitation, Rio de Janeiro, Brazil, September 2010.

II b. Work With Students

ICRANet students:

- Kuantay Boshkayev

Topic: Exact and approximate metrics in relativistic astrophysics

II c. Diploma thesis supervision

ICRANet students:

- Orlando Luongo (PhD)

Topics: Geodesic motion in a mass-quadrupole field

Cosmological models in Einstein's gravity

- Daniela Pugliese (PhD)

Topic: Motion of test particles around naked singularities

- Safia Taj (PhD)

Topic: Geometrothermodynamics of black holes

UNAM students:

- Jose Alvarez (PhD)

Topic: Statistical models for black holes

- Lorena Campuzano (MSc)

Topic: Thermodynamics of cosmological models

- Francisco Hernandez (PhD)

Topic: Holography in field theories

- Francisco Nettel (PhD)

Topic: Topological quantization in string theory

- Leticia Plascencia (MSc)

Topic: Statistical models in geometrothermodynamics
- Antonio Ramirez (BSc)
Topic: Geometrothermodynamics of the van der Waals gas
- Moices Rodriguez (PhD)
Topic: Topological quantum mechanics
- Alejandro Vazquez (PhD)
Topic: Variational principles in geometrothermodynamics
II d. Other Teaching Duties
II e. Work With Postdocs
- Dr. Alberto Sanchez (UNAM)
Topic: Geometrothermodynamics and statistics of black holes

2010 List of Publications

- "Thermodynamic Systems as Extremal Hypersurfaces" (A. Vazquez, H. Quevedo, A. Sanchez), *International Journal of Geometry and Physics*, 60 1942-1949 (2010).
- "Exterior and Interior Metrics with Quadrupole Moment" (Hernando Quevedo), *General Relativity and Gravitation* (2010) in press.
- "Phase Transitions in Geometrothermodynamics" (Hernando Quevedo, Alberto Sánchez, Safia Taj and A. Vázquez), *General Relativity and Gravitation* (2010) in press.
- "Curvature as a Measure of Thermodynamic Interaction" (Hernando Quevedo, Alberto Sánchez, Safia Taj and A. Vazquez) *Korean Journal of Physics* (2010) in press.
- "Mass Quadrupole as a Source of Naked Singularities" (Hernando Quevedo), *International Journal of Modern Physics D* (2010) submitted.
- "Circular Motion in Reissner-Nordström Spacetime" (Daniela Pugliese, Hernando Quevedo and Remo Ruffini) in *Proceedings of the Twelfth Marcel Grossmann Meeting on General Relativity* (Paris, France July 12 – 18, 2009).
- "Matching conditions in relativistic astrophysics (Hernando Quevedo) in *Proceedings of the Twelfth Marcel Grossmann Meeting on General Relativity* (Paris, France July 12 – 18, 2009).
- "Toward an Invariant Definition of Repulsive Gravity" (Orlando Luongo and Hernando Quevedo) in *Proceedings of the Twelfth Marcel Grossmann Meeting on General Relativity* (Paris, France July 12 – 18, 2009).