

# CURRICULUM VITAE

*Dr. Alejandro Corichi Rodríguez Gil*

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## *Datos Personales*

<b>Domicilio</b>	Agustin Melgar 180, Morelia, 58260, Michoacán, México
<b>Teléfono Particular</b>	(443) 314-2844, 5662-7276
<b>Fecha de Nacimiento</b>	2 de noviembre de 1967
<b>Nacionalidad</b>	Mexicana
<b>Estado Civil</b>	Casado

## *Carrera Académica*

1993-1997	<b>Ph.D.</b> , Doctorado en Física Teórica, Departamento de Física, Universidad Estatal de Pennsylvania, Pennsylvania, USA. <i>Título de la Tesis</i> “Interplay between Topology, Gauge Fields and Gravity.” <i>Director de Tesis</i> Prof. Abhay Ashtekar. <i>Fecha del Examen</i> 14 de Abril de 1997.
1992-1993	<b>Estudios de Maestría en Física</b> , Departamento de Física, Universidad de Syracuse, Nueva York, USA.
1985-1991	<b>Licenciatura en Física</b> , Facultad de Ciencias, Universidad Nacional Autónoma de México, México <i>Título de la Tesis</i> “Introducción a la Geometrodinámica” <i>Fecha del Examen</i> 31 de Octubre de 1991. Aprobado con Mención Honorífica.

## *Experiencia Laboral*

- 2007-2008      **Profesor Visitante,**  
Instituto de Gravitacion y el Cosmos,  
Universidad Estatal de Pennsylvania, USA
- 2005-            **Investigador Titular B, t. c.,**  
Instituto de Matemáticas,  
Universidad Nacional Autónoma de México, Morelia, México
- 2003-2005      **Investigador Titular B, t. c.,**  
Instituto de Ciencias Nucleares,  
Universidad Nacional Autónoma de México, México
- 2001-2002      **Research Associate,**  
Departamento de Física y Astronomía,  
Universidad de Mississippi, USA
- 1999-2003      **Investigador Titular A, t. c.,**  
Instituto de Ciencias Nucleares,  
Universidad Nacional Autónoma de México, México
- 1998-a la fecha **Profesor de Asignatura,**  
Departamento de Física, Facultad de Ciencias  
Universidad Nacional Autonoma de Mexico, Mexico
- 1997-1999      **Investigador Asociado C, t. c.,**  
Instituto de Ciencias Nucleares,  
Universidad Nacional Autónoma de México, México
- 1996            **Ayudante de Profesor,**  
Departamento de Física,  
Universidad Estatal de Pennsylvania, U.S.A.  
Laboratorios de licenciatura y curso de posgrado en física.
- 1989-1991      **Ayudante de Profesor,**  
Departamento de Física y Departamento de Matemáticas  
Facultad de Ciencias, UNAM, México  
Cursos de licenciatura en física y matemáticas

## *Idiomas*

Inglés  
Alemán  
Italiano

*Publicaciones Arbitradas*

1. A. Corichi y D. Núñez, “*Introducción al formalismo ADM*”, Rev. Mex. de Física, **37**, N°4, (1991), 720-747.
2. A. Corichi, “*Comment on Hamiltonian theory of a system with constraints*”, Jour. Math. Phys., **33**, (1992), 4066-4067.
3. A. Corichi and M. Pierri, “*Gravity and Geometric Phases*”, Phys. Rev. D**51**, N°10, (1995), 5870-5875.
4. A. Ashtekar and A. Corichi, “*Photon Inner Product and the Gauss Linking Number*”, Class. Quantum Grav. **14**, (1997), A43-A53.
5. A. Corichi and M. P. Ryan Jr., “*Quantization of Non-standard Hamiltonian Systems*”, J. of Phys. A: Math. Gen. **30**, (1997), 3553-3572.
6. A. Corichi and J.A. Zapata, “*On Diffeomorphism Invariance for Lattice Theories*”, Nuclear Physics **B493**, (1997), 475-490.
7. A. Ashtekar and A. Corichi, “*Gauss Linking Number and Electro-magnetic Uncertainty Principle*”, Phys. Rev. **D56**, (1997), 2073-2079
8. A. Ashtekar, J. Baez, A. Corichi, and K. Krasnov, “*Quantum Geometry and Black Hole Entropy*”, Phys. Rev. Lett. **80**, (1998), 904-907.
9. A. Corichi and K. Krasnov, “*Ambiguities in Loop Quantization: Area vs. Electric Charge*”. Mod. Phys. Lett. **A13**, (1998), 1339-1346.
10. A. Corichi, “*Introduction to the Fock Quantization of the Maxwell Field*”, Rev. Mex. Fis., **44**(4), (1998), 402-412.
11. A. Ashtekar, A. Corichi, and J.A. Zapata, “*Quantum Theory of Geometry III: Non-commutativity of Riemannian Structures*”, Class. Quantum Grav. **15**, (1998), 2955-2972.
12. A. Corichi, “*Edge States and Black Hole Entropy*”, Gen. Rel. Grav. **31**, (1999), 615-620.

13. A. Corichi and M.P. Ryan Jr., “*Reflections on the Geometrical Approach to Quantum Mechanics applied to Cosmology*”, Gen. Rel. Grav. **31**, (1999), 621-628.
14. A. Ashtekar, A. Corichi and K. Krasnov “*Isolated Horizons: the Classical Phase Space*”, Adv. Theor. Math. Phys. **3**, 419-478 (2000), Preprint: gr-qc/9905089
15. A. Corichi and A. Gomberoff “*On a Spacetime duality in 2 + 1 Gravity*”, Class. Quantum Grav **16**, 3579-3598 (1999).
16. A. Corichi, G. Cruz, A.M. Minzoni, P. Padilla, M. Rosenbaum and M.P. Ryan Jr., N.F. Smyth, “*The effect of low momentum quantum fluctuations on a coherent field structure*”, Phys. Rev. **D61**, 105011 (2000). Preprint hep-ph/9904289
17. A. Ashtekar and A. Corichi, “*Laws governing Isolated Horizons: Inclusion of Dilaton Couplings*”, Class. Quantum Grav. **17**, 1317-1332 (2000). Preprint gr-qc/9910068
18. A. Corichi and D. Sudarsky, “*Mass of Colored Black Holes*”, Phys. Rev. **D61**, 101501(R) (2000). Preprint gr-qc/9912032
19. A. Corichi, U. Nucamendi and D. Sudarsky, “*Einstein-Yang-Mills Isolated Horizons: Phase Space, Mechanics, Hair and Conjectures*”, Phys. Rev. **D62** 044046 (2000). Preprint: gr-qc/0002078
20. A. Corichi and M. Reyes, “*A Gaussian Weave for Kinematical Loop Quantum Gravity*”, Int. Jour. Mod. Phys. **D10**, 325-338 (2001). Preprint: gr-qc/0006067.
21. A. Ashtekar, A. Corichi and D. Sudarsky, “*Hairy Black Holes, Horizon Mass and Solitons*”. Class. Quantum Grav. **18**, 919-940 (2001). Preprint gr-qc/0011081.
22. A. Corichi, U. Nucamendi and D. Sudarsky, “*Mass formula for EYM Solitons*”. Phys. Rev. **D64**, 107501 (2001). Preprint: gr-qc/0106064.
23. A. Corichi, G. Cruz, A.M. Minzoni, P. Padilla, M. Rosenbaum, M.P. Ryan Jr., N.F. Smyth and T. Vucasinak. “*Quantum Collapse of a Small Dust Shell*”, Phys. Rev. **D65**, 0640006 (2002). Preprint gr-qc/0109057.
24. A. Corichi, M.P. Ryan, D. Sudarsky, “*Quantum Geometry as a Relational Construct*”, Mod. Phys. Lett. **A17**, 555-567 (2002). Preprint gr-qc/0203072.
25. A. Corichi, J. Cortez, H. Quevedo, “*On Unitary time evolution in Gowdy  $T^3$  Cosmologies*”, Int. J. Mod. Phys. **D11**, 1451 (2002). Preprint gr-qc/0204053.

26. A. Corichi and D. Sudarsky, “*When is  $S=A/4$ ?*”. Mod. Phys. Lett. **A17**, 1431-1443, (2002). Preprint gr-qc/0010086.
27. A. Corichi, J. Cortez, H. Quevedo, “*Schrödinger Representation for a scalar field on curved spacetime*”, Phys. Rev. **D66**, 085025 (2002). Preprint gr-qc/0207088.
28. A. Corichi, J. Cortez and H. Quevedo, “*Note on canonical quantization and unitary equivalence in field theory*”. Class. Quantum Grav. **20**, L83-L93 (2003). arXiv:gr-qc/0212023.
29. A. Corichi, “*Quasinormal modes, black hole entropy, and quantum geometry*”. Phys. Rev. **D67**, 087502 (2003). arXiv:gr-qc/0212126.
30. M. Alcubierre, A. Corichi, J.A. Gonzalez, D. Nuñez, M. Salgado, “*Hyperbolicity of the KST formulation of Einstein’s equations coupled to a modified Bona-Masso slicing condition*”, Phys. Rev. **D67**, 104021 (2003). Preprint gr-qc/0303086.
31. A. Ashtekar, A. Corichi and D. Sudarsky “*Non-minimally coupled scalar fields and isolated horizons*”. Class. Quantum Grav. **20**, 3413-3425 (2003). arXiv: gr-qc/0305044.
32. M. Alcubierre, A. Corichi, J.A. Gonzalez, D. Nuñez, M. Salgado, “*A hyperbolic slicing condition adapted to Killing fields and densitized lapses*”, Class. Quantum Grav. **20**, 3629-3646 (2003). Preprint gr-qc/0303069.
33. A. Ashtekar and A. Corichi, “*Non-minimal couplings, quantum geometry and black hole entropy*”. Class. Quantum Grav. **20**, 4151-4162 (2003). arXiv: gr-qc/0305082.
34. A. Corichi and A. Gomberoff, “*Black Holes in de Sitter Space: Masses, Energies and Entropy Bounds*”, Phys. Rev. **D69**, 064016 (2004). Preprint hep-th/0311030.
35. A. Corichi and J. Cortez, “*Note on Self-duality and the Kodama State*”, Phys. Rev. **D69**, 047702 (2004). Preprint hep-th/0311089.
36. B. Bolen, L. Bombelli, A. Corichi, “*Semiclassical States in Quantum Cosmology: Bianchi I Coherent States*”, Class. Quantum Grav. **21**, 4087 (2004). arXiv: gr-qc/0404004.
37. A. Corichi, J. Cortez, H. Quevedo, “*Fock and Schrodinger Representations for field theory on Curved Spacetime*”. Annals of Physics (NY) **313**, 446-478 (2004). Preprint hep-th/0202070.
38. A. Corichi, “*Comments on area spectra in Loop Quantum Gravity*”. Rev. Mex. Fis. **50**, 549-552 (2004). arXiv:gr-qc/0402064.

39. L. Bombelli, A. Corichi and O. Winkler, “*Semiclassical Quantum Gravity: Statistics of Combinatorial Riemannian Geometries*”. *Annalen der Physik* **14**, 499-519 (2005). ArXiv: gr-qc/0409006.
40. A. Ashtekar, L. Bombelli and A. Corichi, “*Semi-classical states for constrained systems*”, *Phys. Rev.* **D72** 0205008 (2005). ArXiv:gr-qc/0504052.
41. I. Pena, C. Chryssomalakos, A. Corichi and D. Sudarsky, “*On a puzzle about bremsstrahlung as described by coaccelerated observers*”, *Phys. Rev.* **D72** 084018 (2005). arXiv:gr-qc/0507040.
42. A. Corichi and D. Sudarsky, “*Towards a new approach to quantum gravity phenomenology*”, *Int. J. Mod. Phys.* **D14**, 1685-1698 (2005). ArXiv:gr-qc/0503078.
43. M. Alcubierre, A. Corichi, J. A. Gonzalez, D. Nunez, B. Reimann and M. Salgado, “*Generalized harmonic spatial coordinates and hyperbolic shift conditions*”, *Phys. Rev.* **D72**, 124018 (2005). arXiv:gr-qc/0507007.
44. A. Corichi, J. Cortez and G. Mena Marugan, “*Unitary evolution in Gowdy cosmology*”, *Phys. Rev.* **D73**, 041502(R) (2006). ArXiv:gr-qc/0510109.
45. A. Corichi, “*Quantum Superposition Principle and Geometry*”. *Gen. Rel. Grav.* **38**, 677-687 (2006). arXiv: quant-ph/0407242.
46. A. Corichi, U. Nucamendi and M. Salgado, “*Scalar hairy black holes and scalarons in the isolated horizons formalism*”, *Phys. Rev.* **D73**, 084002 (2006). ArXiv:gr-qc/0504126.
47. A. Corichi, J. Cortez and G. Mena Marugan, “*Quantum Gowdy  $T^3$  cosmology: A unitary description*”, *Phys. Rev.* **D73**, 084020 (2006). ArXiv:gr-qc/0603006.
48. A. Corichi, J. Cortez, G. Mena Marugan and J. Velhinho, “*Quantum Gowdy  $T^3$  cosmology: A uniqueness result*”, *Class. Quantum Grav.* **23**, 6301-6319 (2006). ArXiv:gr-qc/0607136.
49. A. Corichi, J. Diaz-Polo and E. Fernandez-Borja, “*Quantum Geometry and microscopic black hole entropy*”, *Class. Quantum Grav.* **24**, 243-251 (2007). ArXiv:gr-qc/0605014.
50. A. Corichi, T. Vukasinac and J.A. Zapata. “*Hamiltonian and physical Hilbert space in polymer quantum mechanics*”, *Class. Quantum Grav.* **24**, 1495-1511 (2007). arXiv:gr-qc/0610072.
51. A. Corichi, J. Diaz-Polo and E. Fernandez-Borja, “*Black hole entropy quantization*”, *Phys. Rev. Lett.* **98**, 181301 (2007). arXiv:gr-qc/0609122.

52. A. Corichi, T. Vukasinac and J.A. Zapata. “*Polymer quantum mechanics and its continuum limit*”, Phys. Rev. **D76**, 044016 (2007). arXiv:0704.0007v1 [gr-qc].
53. A. Corichi, J. Cortez, G. Mena Marugan and J. Velhinho, “*Quantum Gowdy  $T^3$  Cosmology: Schroedinger Representation with Unitary Dynamics*”, Phys. Rev. **D76** 124031 (2007). arXiv:0710.0277v2 [gr-qc].
54. A. Ashtekar, A. Corichi and P. Singh, “*Robustness of key features of loop quantum cosmology*”, Phys. Rev. **D77**, 024046 (2008). arXiv:0710.3565v3 [gr-qc].
55. A. Corichi and P. Singh, “*Quantum bounce and cosmic recall*”, Phys. Rev. Lett. **100**, 161302 (2008). arXiv:0710.4543v1 [gr-qc].
56. A. Corichi and J.A. Zapata, “*Quantum Structure of Geometry: Loopy and Fuzzy?*”, Int. Jour. Mod. Phys. **D17**, 445-451 (2008). arXiv:0705.2440v1 [gr-qc].
57. A. Corichi, “*On the geometry of quantum constrained systems*”, Class. Quantum Gravity **25**, 135013 (2008). arXiv:0801.1119v1 [gr-qc].
58. A. Corichi and P. Singh, “*Is loop quantization in cosmology unique?*”, Phys. Rev. **D 78**, 024034 (2008). arXiv:0805.0136v1 [gr-qc].

### *Publicaciones en Memorias y Libros*

59. A. Ashtekar, A. Corichi, and M. Pierri, “*Geometry in Color Perception*”, en ‘Black holes, Gravitational Radiation and the Universe’, B. Bhawal and B.R. Iyer eds. Kluwer, Dordrecht (1998), 535-549.
60. A. Corichi, and M. Reyes, “*A Gaussian weave for loop quantum gravity*”, en ‘Memorias del III Taller Mexicano de Gravitacion, Leon Gto, Mexico, Diciembre de 1999: ”Aspectos de Gravitacion y Fisica matematica”, N. Breton, S. Garcia, O. Pimentel eds. Universidad de Guanajuato (2000).
61. A. Corichi and D. Sudarsky, “*Hair from the Isolated Horizon Perspective*”, en Proceedings of the 9th Marcel Grossmann Meeting, Rome, Italy, July 2000, R. Jantzen ed. Pp 1540-43. Preprint gr-qc/0011084
62. A. Corichi and M. Reyes, “*Gaussian Weaves: New Results*”, en Proceedings of the 9th Marcel Grossmann Meeting, Rome, Italy, July 2000, R. Jantzen ed. Pp 1275-76.
63. A. Corichi, J. Cortez and H. Quevedo, “*On Time Evolution in Gowdy  $T^3$  Models*”, en Proceedings del IV Taller de Gravitacion y Fisica Matematica, Chapala, Mexico. Rev. Mex. Fis., **49**, **S2**, 106-110 (2003).

64. A. Corichi, “*Loop quantum geometry: A primer*”, J. Phys.: Conf. Ser. **24**, 1-22 (2005). (Proceedings of the VI Mexican School on Gravitation and Mathematical Physics.) arXiv:gr-qc/0507038.
65. A. Corichi, J. Cortez and G. Mena Marugan, “*Unitary Quantization of the Gowdy  $T^3$  Cosmology*”, en Proceedings del 11th Marcel Grossmann Meeting, Berlin, 2006.
66. A. Corichi, J. Diaz-Polo and E. Fernandez-Borja, “*Loop quantum gravity and Planck-size black hole entropy*”, J. Phys.: Conf. Serv. **68** 012031 (2007). (Proceedings of the NEB XII International Conference.) arXiv:gr-qc/0703116.
67. A. Corichi, T. Vukasinac and J.A. Zapata. “*On a continuum limit for loop quantum cosmology*”, AIP Conf. Proc. **977**, 64 (2008) (Recent Developments in Gravitation and Cosmology: 3rd Mexican Meeting on Mathematical and Experimental Physics). arXiv:0711.0788v1 [gr-qc].
68. A. Corichi, “*Black holes in loop quantum gravity: Recent results*”, Proceedings of ICGC’07, the 6th International Conference on Gravitation and Cosmology, Dec 2007, Pune, India.

## *Ensayos*

1. A. Corichi, M.P. Ryan, D. Sudarsky, “*Patching Together a Quantum Space-time*”, ensayo enviado al *Gravity Research Foundation awards for essays on gravitation, 1999*.

## *Reseñas*

1. Reseña del artículo: Kim, S.P. “*Semiclassical Quantization of Matter Fields in Gravity*”, en: Mathematical Reviews **99c:83030**
2. Reseña del artículo: Visser, M. “*The reliability horizon for semi-classical quantum gravity: metric fluctuations are often more important than back-reaction*”, en: Mathematical Reviews **99c:83035**
3. Reseña del artículo: Mostafazadeh, A. “*Exact semiclassical evolution in relativistic and non-relativistic scalar quantum mechanics and quantum cosmology*”, en: Mathematical Reviews **99d:83047**
4. Reseña del artículo: Acacio de Barros, J., Pinto-Neto, N., “*The causal interpretation of quantum mechanics and the singularity problem and time issue in quantum cosmology*”, en: Mathematical Reviews **99d:83043**



5. Reseña del artículo: Horiguchi, T. “*Gravitational constant, cosmological constant and phases of quantum gravity based on the Wheeler-De Witt equation*”, en: *Mathematical Reviews* **99g:83034**
6. Reseña de eventos: Corichi, A “*3 Conferences for 30 years of Gravity at UNAM*”, en: *Matters of Gravity* **23**, 17-18, Spring 2004.
7. Reseña de eventos: Corichi, A “*VI Mexican School*”, en: *Matters of Gravity* **25**, 12-13, Spring 2005.

### *Conferencias como Asistente*

#### **9th Marcel Grossmann Meeting in General Relativity**

Julio del 2000,  
Roma, Italia.

#### **Hartle Fest**

Febrero 1999,  
KITP, UCSB, Santa Barbara, USA.

#### **III Mexican School: Black Holes, Classical and Quantum**

Noviembre 1998,  
Mazatlán, Sinaloa, México.

#### **Spinoza Meeting on the Quantum Black Hole**

Julio 1998, Universidad de Utrecht  
Utrecht, Holanda.

#### **Introductory School on String Theory**

Junio 1998, Centro Internacional de Fisica Teorica  
Trieste, Italia.

#### **2nd Annual Penn State Meeting**

“*Quantum Geometry*”  
Agosto 1994, Universidad Estatal de Pennsylvania  
University Park, Pennsylvania, USA.

#### **VII Marcel Grossmann Meeting**

Julio 1994, Universidad de Stanford  
Palo Alto, California, USA.

#### **PASCOS 94**

1993, Universidad de Syracuse  
Syracuse, Nueva York, USA.

**Aspects of General Relativity and Mathematical Physics**

*en Honor al Prof. Plebansky*

Junio 1993, CINVESTAV, Mexico

**Directions in General Relativity**

*en Honor a los Profs. Brill y Misner*

Mayo 1993, Universidad de Maryland  
College Park, Maryland, USA.

**SILARG VII**

Cocoyoc, Mexico, 1990.

*Conferencias, Seminarios y Charlas*

**Seminario de Relatividad** *Geometric Phases in Gravity*

Marzo 1994, Departamento de Física, Universidad Estatal de Pensylvania  
University Park, Pensylvania, USA.

**8<sup>va</sup> Reunión Anual de la División de Partículas y Campos, SMF**

*Papel de la Topología en el Campo Cuántico de Maxwell,*

Junio 1994, Universidad Autónoma Metropolitana, Iztapalapa, México.

**2<sup>da</sup> Reunion Anual de la División de Gravitación y Física Matemática, SMF**

*Gravedad y Fases Geométricas*

Julio 1994, Centro de Investigación y Estudios Avanzados, IPN,  
México D.F., México.

**Seminario de Relatividad**

*Principio de Incertidumbre para el Campo de Maxwell*

Agosto 1994, Universidad Autónoma Metropolitana, Iztapalapa,  
México.

**Seminario de Relatividad** *Holomorphic Quantization of 2+1 Gravity on  $T^2$*

Abril 1995, Departamento de Física, Universidad Estatal de Pensylvania  
University Park, Pensylvania, USA.

**3<sup>ra</sup> Reunion Anual de la DGFM, SMF**

*Cuantización de Sistemas Hamiltonianos no Standard?*

Abril 1995, Universidad Nacional Autónoma de México,  
México D.F., México.

**Seminario de Relatividad**

*Cuantización Holomorfa de Gravedad en 2+1 dimensiones sobre el Toro*  
Mayo 1995, Universidad Autónoma Metropolitana, Iztapalapa,  
México.

**Seminario del Departamento de Gravitación y Teoría de Campos**

*Holomorphic Quantization of 2+1 Gravity with  $\Lambda \neq 0$  on  $T^2$*   
Mayo 1995, Instituto de Ciencias Nucleares, UNAM,  
México.

**Seminario de Relatividad**

*Invariancia ante Difeomorfismos en Teorías de Norma sobre la Red*  
Agosto 1996, Universidad Autónoma Metropolitana, Iztapalapa,  
México.

**Seminario del Departamento de Gravitación y Teoría de Campos**

*Novedades en Geometría Cuántica*  
Agosto 1996, Instituto de Ciencias Nucleares, UNAM,  
México.

**Seminario de Relatividad**

*Origin of Non-commutativity in Quantum Geometry*  
Octubre 1996, Syracuse University, Syracuse, Nueva York  
USA.

**4<sup>th</sup> Annual Penn State Meeting: New Voices in Relativity and Quantum Gravity**

*Origin of Unexpected Non-commutativity in Quantum Geometry*  
Noviembre 1996, Penn State University, Pennsylvania,  
USA.

**Seminario de Relatividad** *Quantizing 2+1 Gravity with  $\Lambda \neq 0$*

Febrero 1997, Departamento de Física, Universidad Estatal de Pennsylvania  
University Park, Pennsylvania, USA.

**Seminario del Departamento de Gravitación y Teoría de Campos**

*Sorpresas en la Cuantización de Teorías de Norma*  
Junio 1997, Instituto de Ciencias Nucleares, UNAM,  
México.

**11<sup>ra</sup> Reunion Anual de la DPC, SMF**

*Cuantización de Lazo de la Teoría de Maxwell y Carga Eléctrica*  
Junio 1997, Universidad Nacional Autónoma de México,

México D.F., México.

**Seminario del Departamento de Física**

*Mecánica Cuántica de la Geometría del Espacio*

Junio 1997, Universidad Autónoma Metropolitana, Iztapalapa, México.

**Plática Invitada, Mexican Meeting on Gauge Theories of Gravity**

*Edge States in The Gauge Formulation of 2 + 1 Gravity*

Octubre 1997, Universidad Autónoma Metropolitana, Iztapalapa, México.

**Plática Invitada, II Taller de Gravitación y Física Matemática**

*Gravedad Cuántica: ¿Porqué y para que?*

Diciembre 1997, Universidad Veracruzana, Jalapa, México.

**Seminario de Relatividad**

*Loop Quantum Gravity: What are we quantizing?*

Junio 1998, Instituto de Física Teórica, Universidad de Viena, Austria.

**Plática Plenaria, Escuela Latinoamericana de Física 98**

*Quantum Mechanics is Geometry too*

Agosto 1998, El Colegio Nacional, México D.F., México.

**Seminario del Departamento de Gravitación y Teoría de Campos**

*La Mecánica Cuántica también es Geometría*

Septiembre 1998, Instituto de Ciencias Nucleares, UNAM, México.

**Conferencia del Ciclo de Conferencias de Otoño, FENOMECC**

*Evaporación de Hoyos Negros y la Paradoja de la Información*

Noviembre 1998, Facultad de Ciencias, UNAM, México.

**Pacific Coast Gravity Meeting**

*Some new insights from 2 + 1 gravity*

Febrero 1999, Departamento de Física, Universidad de California en Santa Barbara U.S.A.

**VII Reunión Anual de la DGFM, SMF**

*Wick rotation without Wick rotation: ejemplos*

Abril 1999, Instituto Nacional de Investigaciones Nucleares,  
México D.F., México.

**Seminario del Departamento de Gravitación y Teoría de Campos**

*Wick rotation without Wick rotation*

Febrero 2000, Instituto de Ciencias Nucleares, UNAM,  
México.

**VIII Reunion Anual de la DGFM, SMF. Plática Invitada**

*¿Que es eso de Horizontes Aislados?*

Abril 2000, Universidad Autónoma Metropolitana - Iztapalapa,  
México D.F., México.

**9th Marcel Grossmann Meeting**

*Gaussian Weave in Loop Quantum Gravity*

Julio 2000, Universidad de Roma 'La Sapienza',  
Roma, Italia.

**9th Marcel Grossmann Meeting**

*Isolated Horizons for Theories with Hair*

Julio 2000, Universidad de Roma 'La Sapienza',  
Roma, Italia.

**Coloquio del Instituto de Matemáticas**

*Escala de Planck: Geometría Cuántica y No-conmutativa*

Diciembre de 2000, Instituto de Matemáticas, UNAM, Unidad Morelia,  
México.

**Seminario del Departamento de Gravitación y Teoría de Campos**

*Hacia una fenomenología de hoyos negros peludos*

Enero 2001, Instituto de Ciencias Nucleares, UNAM,  
México.

**Coloquio de Relatividad y Física Matemática**

*Hoyos Negros Peludos, Solitones y otras Bestias*

Febrero 2001, Departamento de Física, CINVESTAV, IPN,  
México.

**IX Reunion Anual de la DGFM, SMF. Plática Invitada**

*Is Quantum Geometry Point-less?*

Mayo 2001, CINVESTAV,  
México D.F., México.

**Seminario Sandoval Vallarta**

*Geometría Cuántica a la Escala de Planck*

Mayo 2001, Instituto de Física, UNAM,  
México.

**Seminario de Relatividad**

*Isolated horizons and some hairy applications*

Noviembre 2001, Perimeter Institute for Theoretical Physics,  
Waterloo, Canada.

**Coloquio del Departamento de Física**

*Hairy Black Holes, Solitons and other Beasts*

Agosto 2002, Department of Physics and Astronomy,  
U. of Mississippi, USA.

**Platica Invitada, Aspects of General Relativity and Mathematical Physics**

en Honor al Prof. Plebanski

*On Unitary evolution in Quantum Cosmology*

Septiembre 2002, CINVESTAV, Mexico

**Seminario de Física Teórica**

*Hairy Black Holes, Solitons and other Beasts*

Marzo 2003, Centro de Estudios Científicos del Sur,  
Valdivia, Chile.

**Seminario del Departamento de Gravitación y Teoría de Campos**

*¿Que onda con los modos cuasinormales y la gravedad cuántica?*

Mayo 2003, Instituto de Ciencias Nucleares, UNAM,  
México.

**Gravitation: A Decennial Perspective**

*Horizon Mass for de Sitter Black Holes*

Junio 2003, Penn State University, Pennsylvania,  
USA.

**Gravitation: A Decennial Perspective**

*When is Quantum Gravity Unitary?*

Junio 2003, Penn State University, Pennsylvania,  
USA.

**Seminario del Departamento de Gravitación y Teoría de Campos**

*¿Se puede definir una masa para de Sitter?*

Agosto 2003, Instituto de Ciencias Nucleares, UNAM,  
México.

**Platica Invitada, XXXVI Congreso Nacional de la SMM.**

*Introducción a la Geometría Cuántica basada en Lazos*

Octubre 2003, U. Aut. del Estado de Hidalgo,  
Pachuca, Mexico.

**Platica Invitada, CECS Summer Meeting on Theoretical Physics.**

*Black Holes in Loop Quantum Gravity*

Enero 2004, Centro de Estudios Científicos,  
Valdivia, Chile.

**Platica Invitada, Conferencias en Honor a M. Rosenbaum.**

*Self-duality, QFT and Link Invariants*

Febrero 2004, UNAM,  
Mexico.

**Seminario de Relatividad**

*Hoyos negros en LQG: any news?*

Marzo 2004, Universidad Autonoma Metropolitana, Iztapalapa,  
México.

**Seminario del Departamento de Fisica Teorica**

*Agujeros Negros en Gravedad Cuantica de Lazos*

Abril 2004, Instituto de Estructura de la Materia, CSIC  
Madrid, España.

**Platica Plenaria, Nonperturbative Quantum Gravity: Loops and Spin Foams.**

*Black Holes in Loop Quantum Gravity*

Mayo 2004, CIRM, Luminy,  
Marseille, Francia.

**Seminario del Departamento de Gravitación y Teoria de Campos**

*QFT, Autodualidad y el Estado de Kodama*

Julio 2004, Instituto de Ciencias Nucleares, UNAM,  
México.

**Seminario del Instituto de Fisica y Matematicas**

*QFT, Autodualidad y el Estado de Kodama*

Julio 2004, Instituto de Fisica y Matematicas, U. Michoacana,  
México.

**Seminario del Departamento de Gravitación y Teoria de Campos**

*Hoyos Negros en Gravedad Cuantica de Lazos*

Octubre 2004, Instituto de Ciencias Nucleares, UNAM,  
México.

**Seminario Sandoval Vallarta**

*Gravedad Cuantica de Lazos y Agujeros Negros*

Octubre 2004, Instituto de Física, UNAM, México.

**Platica Invitada, Workshop on Quantum Gravity in the Americas:  
Status and future directions.**

*Some Issues in semiclassical LQG*

Octubre 2004, Perimeter Institute,  
Waterloo, Canada.

**Platica Plenaria, VI Mexican School on Gravity and Mathematical Physics:  
Approaches to Quantum Gravity**

*Black Holes in Loop Quantum Gravity*

Noviembre 2004, Playa del Carmen  
Mexico.

**Curso (1/3), VI Mexican School on Gravity and Mathematical Physics:  
Approaches to Quantum Gravity**

*Quantum Geometry I: the basics*

Noviembre 2004, Playa del Carmen  
Mexico.

**Seminario de relatividad**

*Semiclassical states and statistical geometry in LQG*

Enero 2005, Instituto de Física Gravitacional y Geometria  
U. Estatal de Pennsylvania, USA.

**Coloquio, Coloquios del Posgrado en Ciencias Fisicas**

*Gravedad Cuantica*

Marzo 2005, ICN-UNAM  
Mexico.

**Platica Invitada, 2005 Año Internacional de la Fisica**

*A 100 años de la Relatividad: ¿Que sabemos del espacio-tiempo?*

Mayo 2005, Museo de Ciencia Universum, UNAM  
Mexico.

**Platica Invitada, Año Mundial de la Fisica**

*A 100 años de la Relatividad: ¿Que sabemos del espacio-tiempo?*

Junio 2005, Universidad Autonoma Metropolitana, Iztapalapa  
Mexico.

**Mesa Redonda, 2005 Año Internacional de la Fisica**

*Relatividad: Presente y Futuro*

Junio 2005, Facultad de Ciencias, UNAM  
Mexico.



**Coloquio del Instituto de Matematicas**

*Aspectos de la representación de Schroedinger en teoria de campos*  
Septiembre de 2005, Instituto de Matematicas, UNAM, Unidad Morelia,  
México.

**Platica Plenaria, Loops'05**

*Semiclassical States and Constrained Systems*  
Octubre 2005, Albert Einstein Institute,  
Golm, Alemania.

**Platica Invitada, Sociedad Astronomica de la Fac. Ciencias**

*A 100 años de la Relatividad: ¿Que sabemos del espacio-tiempo?*  
Octubre 2005, Facultad de Ciencias, UNAM  
Mexico.

**Platica Invitada, 2005 Año Internacional de la Fisica**

*¿Que es el espacio?*  
Noviembre 2005, Feria de la Fisica, Palacio de Mineria  
Mexico.

**Seminario de Grupo de relatividad**

*Quantum Cosmology of the Gowdy model*  
Noviembre 2005, Departamento de Fisica, U. Mississippi  
USA.

**Platica Plenaria, II Meeting on the interface of gravitational  
and quantum realms**

*Loop quantum geometry: non-commutative, fuzzy or what?*  
Diciembre 2005, COZCyT, Zacatecas,  
México

**Seminario del Departamento de Gravitación y Teoria de Campos**

*Crackpot Physics I: Mecanica Cuantica*  
Junio 2006, Instituto de Ciencias Nucleares, UNAM,  
México.

**Curso (1/2), Seminario Especial del Departamento de Astrofisica:**

*Gravedad Cuantica de Lazos I: Introduccion*  
Junio 2006, Universidad de Valencia,  
España.

**Curso (2/2), Seminario Especial del Departamento de Astrofisica:**

*Gravedad Cuantica de Lazos II: Aplicaciones*  
Junio 2006, Universidad de Valencia,  
España.

**Platica Plenaria, Recent developments in Gravity (NEBXII)**

*Microscopic back holes in loop quantum gravity.*

Julio 2006, Naplio, Grecia.

**Quantum Gravity in the Americas III**

*A new approach to quantum gravity phenomenology.*

Agosto 2006, Penn State U, USA.

**Mesa Redonda, Quantum Gravity in the Americas III**

*Back hole counting in loop quantum gravity.*

Agosto 2006, Penn State U, USA.

**Platica Plenaria, 1st Meeting on Matter in Quantum Gravity**

*LQG: Loopy geometry and, what is the matter?*

Noviembre 2006, Patzcuaro, Mexico.

**International Loop Quantum Gravity Seminar**

*Quantum Isolated Horizons: the Planck Scale Regime.*

Noviembre 2006, IMUNAM, Mexico

**Gravity Seminar, IGPG**

*Just how fine is LQC?*

Marzo 2007, Penn State U., USA

**International Loop Quantum Gravity Seminar**

*Relation Between Schroedinger and Polymer Quantum Mechanics.*

Marzo 2007, Penn State U, USA

**Gravity Seminar, IGC**

*The quantum bounce in LQC: Past and future*

Septiembre 2007, Penn State U., USA

**Seminario del Instituto de Fisica y Matematicas**

*El Big bang en la cosmologia cuantica de lazos*

Septiembre 2007, Instituto de Fisica y Matematicas, U. Michoacana, México.

**Platica Invitada, Relativity: Classical and Quantum**

*Is miniperspace quantization justified?*

Diciembre 2007, ICN-UNAM, México.

**Conferencia Plenaria, ICGC07, Int. Conference on Gravitation and Cosmology**

*Black Holes in Loop Quantum Gravity*

Diciembre 2007, IUCAA, Pune, India.

## *Otras Actividades Academicas*

- 2008-            **Miembro del “Scientific Organizing Committee”**,  
GRG19, 19<sup>th</sup> International Conference on General  
Relativity and Gravitation.  
Mexico D.F., Mexico, Julio 2010
- 2007-            **Miembro del “Local Organizing Committee”**,  
GRG19, 19<sup>th</sup> International Conference on General  
Relativity and Gravitation.  
Mexico D.F., Mexico, Julio 2010
- 2007            **Miembro del “Organizing Committee”**,  
Loops’07  
Conferencia Internacional.  
Morelia, Mexico, Junio 2007
- 2006            **Miembro del “Scientific Committee”**,  
Quantum Gravity in the Americas III  
Conferencia Internacional.  
Instituto de Fisica Gravitacional y Geometria,  
Penn State, USA, Agosto 2006
- 2005            **Miembro del “International Scientific Committee”**,  
Loops’05  
Conferencia Internacional.  
Instituto Max Planck para Fisica Gravitacional,  
Golm, Alemania, Octubre 2005
- 2004            **Miembro del Comité Organizador**,  
Homenaje al Dr. Marcos Rosenbaum  
Taller Cientifico  
México D.F., México, Febrero 2004
- 2004            **Miembro del Comité Organizador**,  
30 de Años de Gravitación en la UNAM: Homenaje a Mike Ryan  
Conferencia Cientifica  
México D.F., México, Febrero 2004
- 2004            **Presidente del Comité Organizador**,

- Frontiers in Loop Quantum Gravity  
Workshop avanzado  
México D.F., México, Enero 2004
- 1999            **Miembro del Comité Editorial,**  
Proceedings of the III Mexican School on Gravitation:  
Black Holes: Classical and Quantum  
Mazatlán, México, Noviembre 1998
- 1999            **Miembro del Comité Organizador,**  
III Taller de Gravitación y Física Matemática.  
León, México, Diciembre de 1999
- 1998            **Miembro del Comité Organizador,**  
III Escuela Mexicana de Gravitación y Física Matemática:  
Hoyos Negros, Clásicos y Cuánticos  
Mazatlán, México, Noviembre 1998
- 1998            **Miembro del Comité Organizador,**  
Ciclo de Conferencias de Otoño: Física y Geometría  
FENOMECC, Facultad de Ciencias,  
Mexico, Noviembre 1998
- 1998            **Miembro del Comité Organizador,**  
VI Reunion Anual, DGFM-SMF, Mexico D.F., Abril 1998
- 1998-2001      **Comité Organizador,**  
Seminario Departamental,  
Departamento de Gravitación y Teoría de Campos  
ICN-UNAM, Enero 1998 a Septiembre 2001
- 1998-            **Reviewer para** *Mathematical Reviews,*
- 1997-1998      **Curso Avanzado de Gravedad Cuántica No Perturbativa,**  
ICN, UNAM.
- 1997-            **Referee para las Revistas:** *Physical Review Letters,*  
*Classical and Quantum Gravity, Int. Jour. Mod. Phys. D,*  
*Physical Review D, Gen. Rel. Grav.,*  
*Mod. Phys. Lett. A y la Rev. Mex. de Física*
- 1997-1998      **Curso Avanzado de Gravedad Cuántica No Perturbativa,**  
ICN, UNAM.
- 2000-            **Arbitro de Proyectos Científicos para las agencias:**

*CONACyT (Mexico), CONICET (Chile) y  
FOM (Holanda)*

- 1997                    **Curso de Otoño de FENOMECC: Geometría y Física**  
*Geometría Cuántica y Hoyos Negros*  
Noviembre 3-7 1997, Facultad de Ciencias, UNAM.
- 1997                    **Recopilacion Bibliografica**  
Reportado en: “Bibliography of publications related to classical  
and quantum gravity in terms of connections and loop variables”,  
By C. Beetle and A. Corichi. E-print gr-qc/9703044.
- 2005                    **Recopilacion Bibliografica**  
Reportado en: “Bibliography of publications related to classical  
selfdual variables and loop quantum gravity”,  
By A. Corichi and A. Hauser. E-print gr-qc/0509039.
- 2005-                    **Serie de Television, “El Nuevo Universo”**  
Participacion en la planeacion de la Serie,  
Co-Guionista y Co-Asesor Cientifico.  
Serie Coproducida por Ad-Astra y TV-UNAM.
- 2007-                    **Entrevistas en Radio y TV,**  
a) “Semblanzas de la Ciencia”, 25-06-07, Radio Michoacana,  
b) “Capsula de Ciencia”, 25-06-07, Television Michoacana,  
c) Entrevista con Motivo del Premio “Bachiller Alvaro Galvez  
y Fuentes”, 10-12-07, Canal 22.  
d) Revista “Irradia”, 9-06-08, Radio Mexiquense,  
e) “Antena Radio Primera Edicion”, 17-06-08, IMER.
- 2004-                    **Entrevistas en Medios Impresos,**  
a) “Conferencias en honor del academico Michael Ryan”, Laura Romero,  
19-02-04, Gaceta-UNAM.  
b) “Albert Einstein revoluciona la vision del espacio y el tiempo”,  
Laura Romero, 19-05-05, Gaceta-UNAM.  
c) “Gravitacion cuantica, LOOPS07”, Viridiana Lopez,  
25-06-07, El Cambio de Michoacan.
- 2004-                    **Articulos Periodisticos Mencionando mi Trabajo,**  
1) “Before the Big Bang: A Twin Universe?”, Lisa Zyga,  
PhysOrg, 09-04-08, ([www.physorg.com/news126955971.html](http://www.physorg.com/news126955971.html))  
2) “Did pre-big bang universe leave its mark on the sky?”,  
Stephen Battersby, New Scientist, 10-04-08.  
3) “Are We a Duplicate Universe of the One Prior to the Big Bang?”  
Josh S. Hill, 11-04-08. [www.dailygalaxy.com](http://www.dailygalaxy.com)

- 4) "What was Before the Big Bang? An Identical, Reversed Universe", Ian O'Neill, Universe Today, 14-04-08.
- 5) "Nuestro Universo pudo haberse formado de otro Universo especular anterior", Yaiza Martinez, Tendencias Cientificas, 13-04-08.
- 6) "La memoria del Universo", NeoFronteras, 17-04-08.  
<http://neofronteras.com/?p=1150>.
- 7) "El gran reboton, o como mirar mas alla del big bang", Sergio de Regules (Imagen en la Ciencia), 08-05-08.
- 8) "Analizan nuevas teorias del origen del Universo", Aned Ayala, Periodico Provincia, 11-05-08.
- 9) "Estudian que ocurrio antes del Big Bang", Cecilia Rosen, Diario Reforma, 27-05-08.
- 10) "Contraponen a Big Bang teoria de 'robote cuantico'", Cecilia Rosen, El Norte, 27-05-08.
- 11) "Cuestionan teoria: el Big Bang no fue el inicio de tiempo y espacio" Laura Romero, 05-06-08, Gaceta-UNAM;  
"Posible, que el Big Bang no fuese el Inicio del tiempo y el espacio", Laura Romero, 04-06-08, Boletin UNAM-DGCS-351.
- 12) Boletin de Notimex que fue tomado en:  
El Universal: "Preven que colaboracin de mexicano cambie teoria del big bang"  
Excelsior: "Mexicano sacude la Teoria del 'Big Bang'"  
El Economista.com.mx: "Un mexicano podria reinventar El 'Big Bang'"  
Hechos TV: "Mexicano revoluciona la teoria del Big Bang"  
Yahoo Noticias, Prodigy-MSN: "Colaboracion de Mexicano podria cambiar teoria del big bang"  
Cambio de Michoacan: "El antes del Big Bang"  
Diario de Mexico: "Mexico revoluciona teoria del Big Bang en creacion del universo"  
La Cronica de Hoy: "Mexicano revoluciona la teoria del 'big bang'"  
El Siglo de Torreon: "Mexicano que podria cambiar la teoria del big bang"  
Kiosco Mayor: 'Contraria matematico matematico teoria del "Big Bang"'  
El Mexicano: "Cientifico de la UNAM echa abajo teoria sobre origen del universo". ETC.
- 13) "Mexicano podria cambiar teoria del big bang", Ana Maria Longi Unomasuno, 05-06-08.
- 14) "Antes del *big bang* ocurrio un 'rebote cosmico', segun estudio", La Jornada, 05-06-08.
- 15) "Posible que el Big Bang no fuera el inicio", La Jornada Ciencias 06-06-08.
- 16) "Atrevimiento", Javier Flores, La Jornada, 10-06-08.
- 17) "Mexicano sacude la gran Teoria: Se reescribira la historia del Bin Bang?", Tenoch-Blog, 05-06-08.
- 18) "Que paso antes del origen del universo?", S. Almaraz,

- Ciencia Hoy, 09-06-08.
- 19) “Brilla ciencia pese a todo”, Patricia Lopez y Cecilia Rosen, Reforma y El Norte, 26-06-08.
- 20) “El origen del Universo: Ayer y Hoy”, Joel N Jimenez y Sergio Almaraz, La Jornada Ciencias, 30-06-08.
- 21) “The universe before ours”, Robert Matthews, BBC Focus No.193, Agosto 2008.

### *Distinciones*

- |           |  |
|-----------|--|
| 1988-1991 | <b>Becario de Licenciatura,</b><br>DGAPA, Universidad Nacional Autónoma de México, México.                                     |
| 1991      | <b>Medalla Gabino Barreda,</b><br>Universidad Nacional Autónoma de México, México.   |
| 1991      | <b>Beca Bruno Gonzalez,</b><br>Sociedad Mexicana de Física - CERN.   |
| 1991-1992 | <b>Ayudante de Investigador,</b><br>Sistema Nacional de Investigadores, México.  |
| 1992-1997 | <b>Becario de Doctorado,</b><br>DGAPA, Universidad Nacional Autónoma de México, México.  |
| 1994      | <b>Collegiate Scholastic All American,</b><br>United States Achievement Academy, USA.  |
| 1995-1998 | <b>Candidato a Investigador Nacional,</b><br>Sistema Nacional de Investigadores, México.                                       |
| 1997      | <b>Proyecto de Investigacion Inicial,</b><br>Consejo Nacional de Ciencia y Tecnologia, México.                                 |
| 1998-2001 | <b>Nivel “C” del PRIDE,</b><br>Universidad Nacional Autónoma de México, México.  |
| 1998-2004 | <b>Investigador Nacional I,</b><br>Sistema Nacional de Investigadores, México.   |
| 1999      | <b>Proyecto de Investigacion,</b><br>Modalidad de Jovenes Investigadores,<br>Consejo Nacional de Ciencia y Tecnologia, México. |

- 2000                    **Miembro Regular,**  
Academia Mexicana de Ciencias, México.
- 2001-                   **Nivel “D” del PRIDE,**  
Universidad Nacional Autónoma de México, México.
- 2001                    **Who’sWho in Science and Engineering,**  
6a Edición 2001-2002. Marquis Publishing
- 2001                    **Candidato del ICN-UNAM,**  
Premio de Investigacion de la AMC.
- 2002                    **Candidato del ICN-UNAM,**  
Distincion Universidad Nacional a Jovenes Investigadores.
- 2003                    **Who’sWho in the World,**  
21a Edición 2004. Marquis Publishing
- 2003                    **Candidato del ICN-UNAM,**  
Premio de Investigacion de la AMC.
- 2004                    **Candidato del ICN-UNAM,**  
Distincion Universidad Nacional a Jovenes Investigadores.
- 2004-                   **Investigador Nacional II,**  
Sistema Nacional de Investigadores, México.
- 2005                    **Proyecto de Investigacion,**  
Modalidad de Proyecto de Grupo,  
Consejo Nacional de Ciencia y Tecnologia, México.
- 2005                    **Candidato del ICN-UNAM,**  
Premio de Investigacion de la AMC.
- 2006                    **Estancia de Verano para Investigadores Jovenes,**  
Programa AMC-FUMEC, en la U. Estatal de Pennsylvania.
- 2007                    **Candidato del IM-UNAM,**  
Distincion Universidad Nacional a Jovenes Investigadores.
- 2007                    **Gran Premio Bachiller Alvaro Galvez y Fuentes,**  
Muestra Iberoamericana 2007 de Television y Video Educativo,  
Cientifico y Cultural, a “El Misterio de la Electricidad” de  
la serie “El Nuevo Universo”.



## Docencia y Formación de Recursos Humanos

- 1997- **Pláticas de Divulgación.**  
1). *Gravedad Cuántica: ¿Por qué y para qué?*  
Día de Puertas Abiertas, ICN-UNAM, México D.F., Febrero 2001  
2). *Hoyos Negros: un laboratorio para la física teórica*  
Día de Puertas Abiertas, ICN-UNAM, México D.F., Septiembre 1998  
3). *Física a la Escala Más Alta de Energías: Gravedad Cuántica*  
Día de Puertas Abiertas, ICN-UNAM, México D.F., Noviembre 1997
- 1998 **Conferencia de Divulgación.** *El Universo Inflacionario*  
Dentro del curso: "Cosmología",  
Programa *Jovenes hacia la Investigación*, CCH-Naucalpan, Mayo 1998
- 1998- **Asesor de Tesis**  
Asesoramiento, a partir de Febrero de 1998, del trabajo doctoral del M. en C. Manuel Reyes.  
Título de la tesis: *Operadores Geométricos en Gravedad Cuántica*, con un 90% de avance.  
Departamento de Física, CINVESTAV, Mexico
- 2000- **Asesor de Servicio Social y Tesis**  
Asesoramiento, a partir de Febrero de 2000, del Servicio Social (ya completado) y a partir de febrero de 2001 de la Tesis de Licenciatura del Sr. Alejandro Gonzalez Samaniego.  
Título de la tesis: *Introducción a la termodinámica de agujeros negros*, con un 100% de avance.  
Fecha de Titulación: 4 Julio de 2003.  
Facultad de Ciencias, UNAM, Mexico
- 2000-2003 **Co-asesor de Tesis**  
Co-asesoramiento (con H. Quevedo), a partir de Junio de 2000, del trabajo doctoral del M. en C. Jeronimo Cortez.  
Título de la tesis: *Cuantización de Modelos Sigma no-lineales: la Cosmología de Gowdy  $T^3$* , con un 100% de avance. Fecha de titulación: 9 Julio de 2003.  
Posgrado en Ciencias Físicas, UNAM, Mexico
- 2003- **Tutor Principal, PCF**  
Asesoramiento, a partir de 2003, del trabajo doctoral de los Fis. Alejandro Gonzalez y Alexander Caicedo, y el M. en C. William Cuervo en el Posgrado en Ciencias Físicas

- UNAM, Mexico
- 2006                    **Asesor de Tesis**  
Asesoramiento, a partir de 2006,  
del Trabajo de Investigación (Maestría) de los Lic. Enrique Fernández  
y Jacobo Díaz. Fecha de obtención del grado:  
Junio y Octubre de 2006, respectivamente.  
Universidad de Valencia, España
- 2006-                    **Asesor de Tesis**  
Asesoramiento, a partir de 2006,  
del trabajo doctoral de los Lic. Enrique Fernández  
y Jacobo Díaz, en el programa de  
Doctorado de la Universidad de Valencia,  
España
- 1997-                    **Comités Tutorales**  
Miembro de los comités tutorales de los M. en C. Roman Linares,  
Igor Peña, Jeronimo Cortez y de los Srs. Alejandro González,  
Oztoc Flores y Belinka González en el programa de doctorado y del  
Fis. Raymundo Pérez, el Sr. Leandro Chernicoff, Tiber Ramirez  
y el Lic. Hugo Solís en el programa de maestría.  
Posgrado en Ciencias Físicas, UNAM.
- 1997-                    **Sinodal**  
He sido sinodal en 5 exámenes profesionales en la Fac. de Ciencias, UNAM  
(Jeronimo Cortez, Catalina Espinoza, Erika Reyes, Alejandro González  
y Pablo Castañeda) y 8 exámenes de doctorado: Merced Montesinos,  
Departamento de Física, CINVESTAV. J. Cortez, J.A. González,  
R. Linares, E. Okon, PCF, UNAM. H.H. Hernández, UAM-I,  
G. Frías, UAEM y E. Manrique, UMSNH.
- 2002                    **Sinodal Externo**  
Invitado a ser sinodal externo del Sr. Kevin Setter  
en el programa de Honors, Swarthmore College, Swarthmore  
Pennsylvania, USA.
- 2003-2004              **Asesor de Postdoctorado, ICN-UNAM**  
Asesoramiento, de Agosto de 2003 a Dic. 2004,  
del trabajo Postdoctoral del Dr. Jeronimo Cortez  
Instituto de Ciencias Nucleares (Proyecto Conacyt J32754-E)  
UNAM, Mexico
- 1998                    **Cursos de Doctorado.**  
1). Métodos Geométricos en Cuantización

3 hrs/semana, Departamento de Física, CINVESTAV, Semestre 98-I

2). Geometría Cuántica en Gravedad No-perturbativa  
3 hrs/semana, Departamento de Física, CINVESTAV, Semestre 98-II

3). Geometría de la Teoría Cuántica de Campos  
4 hrs/semana, Posgrado en Matemáticas, UNAM-UMSNH, Semestre 08-I

1998-

**Cursos de Licenciatura.**

1) Métodos Geométricos en Física Matemática  
3 hrs/semana, Facultad de Ciencias, UNAM, Semestre 98-II

2) Relatividad  
3 hrs/semana, Facultad de Ciencias, UNAM, Semestre 99-II

3) Relatividad General  
4.5 hrs/semana, Facultad de Ciencias, UNAM, Semestre 00-I

4) Relatividad  
3 hrs/semana, Facultad de Ciencias, UNAM, Semestre 01-I

5) Relatividad General  
4.5 hrs/semana, Facultad de Ciencias, UNAM, Semestre 03-II

6) Relatividad General I  
4 hrs/semana, F. de Ciencias Físico Matemáticas, UMSNH, 06-II

1998-

**Cursos del Posgrado en Ciencias Físicas, UNAM.**

1) Formulación Geométrica de la Mecánica Cuántica  
3 hrs/semana, Instituto de Ciencias Nucleares, UNAM, Semestre 99-II.

2) Relatividad General  
4.5 hrs/semana, ICN-UNAM, Semestre 00-II

3) Relatividad General Avanzada  
4 hrs/semana, ICN-UNAM, Semestre 03-II

4) Relatividad General Avanzada  
4 hrs/semana, ICN-UNAM, Semestre 04-II

5) Aspectos Cuánticos de la Gravitación  
4 hrs/semana, ICN-UNAM, Semestre 05-II

## *Actividades de Apoyo Institucional*

- 1997-2001      **Miembro de Comité**  
Comité Organizador del Seminario Departamental  
DGyTC, ICN, UNAM.
- 1999-2001      **Miembro de Comité**  
Comité de la Unidad de Docencia y Formación de Recursos Humanos  
Instituto de Ciencias Nucleares, UNAM.
- 1999-2001      **Miembro de Comité**  
Comité de Biblioteca  
Instituto de Ciencias Nucleares, UNAM.
- 2000-2001      **Representante (Suplente)**  
Representante de los tutores del ICN-UNAM  
ante el Comité Académico del Posgrado en Ciencias Físicas, UNAM.
- 2001-2005      **Representante**  
Representante del Director del ICN-UNAM  
ante el Comité Académico del Posgrado en Ciencias Físicas, UNAM.
- 2000-2001      **Consejero Representante**  
Consejero Representante del Personal Académicos del ICN-UNAM  
ante el Consejo Técnico de la Investigación Científica, UNAM.
- 2000-01, 2002-05      **Miembro del Consejo Interno**  
Consejo Interno del ICN-UNAM.
- 2003-2005      **Coordinador de Área**  
Coordinador del “paquete” de gravitación y cosmología  
Posgrado en Ciencias Físicas, UNAM.
- 2003              **Presidente de Mesa Coordinadora**  
Seminarios de Diagnóstico Locales, CECU, ICN-UNAM
- 2002-2004      **Jefe de Departamento**  
Departamento de Gravitación y Campos del ICN-UNAM.
- 2004              **Miembro de la Terna para ocupar la Dirección**  
Instituto de Ciencias Nucleares, UNAM, periodo 2004-2008.
- 2004-              **Miembro de Comisión**  
Comisión de Televisión-UNAM, 2005 Año Internacional de la Física,

- 2004-2005            **Coordinador de Unidad**  
Unidad de Docencia y Formación de Recursos Humanos del ICN-UNAM.
- 2007-                **Miembro de Comisión**  
Comisión de Vinculación y Enlace Interinstitucional, IMUNAM-Morelia  
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