

Alejandro R. Corichi

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PERSONAL INFORMATION

Mexican. Date of birth: 2nd of November of 1967. Married male with two children.

EDUCATION

The Pennsylvania State University, USA
Ph.D. in Physics, August 1997.
Thesis: Interplay between topology, gauge fields and gravity.
Adviser: Prof. Abhay Ashtekar.

Facultad de Ciencias, UNAM, México
Licenciado (Bs./M.Sc.) in Physics, October 1991.
Thesis: Introduction to Geometrodynamics.

EXPERIENCE

Visiting Professor Institute for Gravitation and the Cosmos
Penn State University **August 2008 – July 2009**
I visited the Institute for Gravitation and the Cosmos at Penn State conducting research in quantum gravity.

Researcher/Professor Institute of Mathematics
Universidad Nacional Autónoma de México **August 2005 –**
I joined the Institute for Mathematics, also at UNAM, where a quantum gravity group is now consolidating, including myself, R. Oeckl and J.A. Zapata.

Head of the Department of Gravitation and Field Theory Institute for Nuclear Sciences (ICN)
Universidad Nacional Autónoma de México **September 2002 – August 2004.**
I served as head of the Department of Gravitation and Field Theory, consisting of 13 permanent faculty members, 4 postdoctoral associates and 20 graduate students.

Research Associate Department of Physics and Astronomy
University of Mississippi, USA **September 2001 – August 2002**
Conducted research in classical and quantum gravity. In quantum gravity, the statistical approach to semiclassical states in loop quantum gravity in collaboration with L. Bombelli and O. Winkler. Studies of coherent and semi-classical states for constrained systems.

Associate Researcher/Professor Institute for Nuclear Sciences (ICN)
Universidad Nacional Autonoma de Mexico, Mexico **September 1997 – July 2005. Tenured since 05/00.**
Apart from conducting research in classical and quantum gravity, I have regularly taught courses in the School of Sciences (UNAM) at both the graduate and undergraduate level, advising graduate students, and serving in several committees.

Research Assistant CGPG, Physics Department
The Pennsylvania State University, USA **September 1993 – August 1997**
Completed advanced courses in mathematical physics, quantum field theory and general relativity. Worked on geometrical aspects of quantum mechanics and in the loop quantization of gauge theories.

Teaching Assistant
The Pennsylvania State University, USA
Lab. Instructor for the basic Electromagnetism Course and grader for the Graduate Course in Quantum Mechanics.

**Physics Department
January 1996 to December 1996**

Research Assistant
Syracuse University, USA
Completed the required courses and presented the candidacy examination.

**Physics Department
September 1992 – August 1993**

Research Assistant
UNAM, México.
I worked on canonical gravity with Professors Nuñez and Ryan and completed my thesis work with D. Nuñez as my adviser.

**Institute for Nuclear Sciences
April 1990 to August 1992**

Teaching Assistant
UNAM, México.
Teaching assistant and occasional lecturer in the courses “Partial Differential Equations I”, “Complex Variables I”, “Variational Calculus”, ”Relativity”, and “Quantum Mechanics”.

**Faculty of Sciences
September 1989 to June 1991**

HONORS AND AWARDS

National Researcher, Level III. National System for Researchers (SNI-CONACyT), 2009-.

Research grant in the “Research Groups” category, CONACyT (Mexico), 2005-2009

Who’sWho in the World, 21st Edition, 2004.

National Researcher, Level II. National System for Researchers (SNI-CONACyT), 2004-2008.

Who’sWho in Science and Engineering, 6th Edition 2001-2002.

Regular Member. Mexican Academy of Sciences (AMC), 2000.

Research Grant for Young Researchers. CONACyT (México), 2000-2004.

Beginning Research Grant. CONACyT (Mexico), 1998-1999.

National Researcher, Level I. National System for Researchers (SNI-CONACyT), 1998-2004.

I participate in several research grants from UNAM (DGAPA) and one NSF-CONACyT collaborative grant.

Graduate Fellowship, DGAPA-UNAM, 1992-1997.

Bruno Gonzalez Fellowship, SMF-CERN, to be a Summer Student at CERN, 1991.

Gabino Barreda medal, for the Best Graduating Student in Physics, UNAM, 1991.

PUBLICATIONS:

60 research papers written for international refereed journals specializing in Physics (see publication list). These papers have received more than 1200 (independent) citations.

One article published in a book and ten contributions in Proceedings.

Five review articles written for “The Mathematical Reviews”, American Mathematical Society and two conference reviews for “Matters of Gravity”.

CONFERENCES AND
SCHOOLS

August 2009 *LOOPS'09*, Beijing, China. Plenary Talk.

June 2009 *AbhayFest: Conference on Classical and Quantum Gravity*, Penn State, USA. Invited Talk.

March 2009 *Workshop on Black Holes and Loop Quantum Gravity*, Valencia, Spain. Plenary Talk.

December 2008 *Texas Symposium*, Vancouver, Canada. Invited Talk.

October 2008 *Workshop in LQC*, IGC-Penn State. Invited Talk.

December 2007 *ICGC-07*, The 6th International Conference on Gravitation and Cosmology, Pune, India. Plenary Talk presented.

December 2007 *Relativity: Classical and Quantum*, Conference in honor of Mike Ryan. Talk presented.

August 2006 *Quantum Gravity in the Americas III*, Penn State, USA. Contributed short talk and participation in round table on Black Holes.

June 2006 *NEB XII Conference on Recent Developments in Gravity*, Nafplion, Greece. Plenary talk presented.

December 2005 *2nd Meeting on the Interface of Gravitational and Quantum Realms (IGQR-II)*, Zacatecas University, México. Plenary Talk to be given.

October 2005 *Loops'05*, Albert Einstein Institute, Golm, Germany. Plenary Talk.

November 2004 *VI Mexican School on Gravitation and Mathematical Physics “Approaches to Quantum Gravity”*, Playa del Carmen, México. Plenary talk and Part I of a plenary course given.

October 2004 *Quantum Gravity in the Americas Workshop: Status and future directions* Perimeter Institute, Waterloo, Canada. Invited talk given.

May 2004 *Non-perturbative Quantum Gravity: Loops and Spin Foams*. CIRM-Luminy, Marseille, France. Plenary Talk presented.

February 2004 *Frontiers of Loop Quantum Gravity*. UNAM, Mexico City. Organizing committee.

February 2004 *Ryan-Rosenbaum Fest*. UNAM, Mexico City. Chair of Organizing Committee. Talk presented.

January 2004 *CECS Summer Meeting on Theoretical Physics*. CECS, Chile. Plenary Talk presented.

June 2003 *Gravitation: A Decennial Perspective*. Penn State University. Two talks presented.

- September 2002** *Topics in Math. Physics, Relativity and Cosmology.* CINVESTAV, México. Invited Talk presented.
- April 2001** *Annual Meeting of the Gravity Division (DGFM-SMF).* CINVESTAV, México. Invited Talk presented.
- July 2000** *IX Marcel Grossmann Meeting.* University of Rome “La Sapienza”, Italy. Two talks presented.
- April 2000** *Annual Meeting of the Gravity Division (DGFM-SMF).* Metropolitan Autonomous University (UAM-I), México. Invited Talk presented.
- April 1999** *Annual Meeting of the Gravity Division (DGFM-SMF).* National Institute for Nuclear Research (ININ), México. Talk presented.
- March 1999** *Workshop on Strong Gravitational Fields.* Institute for Theoretical Physics, University of Santa Bárbara, USA.
- February 1999** *15th Pacific Coast Gravity Meeting/Hartlefest.* Institute for Theoretical Physics, University of Santa Bárbara, USA. Talk presented.
- November 1998** *3rd School on Gravitation and Mathematical Physics.* Mexican Physical Society, Mazatlán, México.
- July 1997** *Workshop on the Quantum Black Hole.* Institute for Theoretical Physics, University of Utrecht, Holland.
- June 1998** *Introductory School in String Theory.* International Centre for Theoretical Physics, Trieste, Italy.
- December 1997** *2nd Workshop on Gravitation and Mathematical Physics.* Mexican Physical Society, University of Veracruz, México. Invited Talk presented.
- November of 1996** *New Voices in General Relativity.* Physics Department, The Pennsylvania State University, USA. Talk presented.
- November of 1995** *3rd Annual Penn State meeting on General Relativity.* Center for Gravitational Physics and Geometry, The Pennsylvania State University, USA.
- July 1995** *Annual Meeting of the Mexican Physical Society on Particles and Fields.* Universidad Nacional Autónoma de México, México. Talk presented.
- November of 1994** *2nd Annual Penn State meeting on General Relativity.* Center for Gravitational Physics and Geometry, The Pennsylvania State University, USA.
- July of 1994** *VII Marcel Grossmann Meeting.* Stanford University, USA.
- October of 1993** *1st Annual Penn State meeting on General Relativity.* Center for Gravitational Physics and Geometry, The Pennsylvania State University, USA.
- May of 1993** *Directions in general Relativity.* University of Maryland, College Park, USA.

SEMINARS

I have given talks on my research papers (see publication list) in the relativity seminar at Penn State on March of 94, April of 95, February of 97, January 2005, April and September 2007. In November of 96 I gave the relativity tea at Syracuse University. In June 1998 I gave the relativity seminar of the institute for Theoretical Physics, University of Vienna. In November 2001 I gave a seminar at the Perimeter Institute. In August 2002, I gave the seminar in the Physics Department, U. of Mississippi, in March 2003, the theoretical physics seminar at CECS, Chile, and in April 2004, the seminar of the IFEM-CSIC, Madrid. I have given seminars and colloquia in all the major research institutions in México, including UNAM, UAM-I, CINVESTAV, U. of Michoacan and U. of Zacatecas. During the “2005 year of physics”, I gave four general public talks at UNAM and UAM-I, including one during the main closing event.

TEACHING

I have (co-)advised 3 Ph.D. Student (J. Cortez, E. Fernandez-Borja and J. Diaz-Polo), and I am supervising two more in both classical and quantum aspects of gravitational physics. I have also (co-)supervised several postdoctoral students (Nucamendi, Cortez). I have taught courses in general relativity and mathematical methods at both undergraduate and graduate levels.

SERVICE

I have been member of the following internal committees in the Institute for Nuclear Sciences (ICN-UNAM):

Internal Council , 2000-2001, 2001-

Library Committee, 1999-2001

Student Affairs Committee, 2000-2001

Also served in several external committees, as representative of the Institute for Nuclear Sciences before the University Research Council, and served in sub-committees evaluating promotions and tenure. Served as representative before the Academic entity that oversees the Physics Graduate Program (offered by 7 Research Institutes and the School of Sciences), 2000-2005, and was actively involved in the design of the new Ph.D. curriculum in Physics.

From September 2004 to July 2005, I was responsible for Student Affairs (100+ students) for the Institute.

I was involved in the planing and script writing of a T.V. series, motivated by the 2005 physics year, produced by UNAM with the title *The New Universe: How physics changed the world*. The first program won First prize at the second Iberoamerican meeting for scientific videos (2007), the second program won the Prize given by the Iberoamerican Television Association during the XXV festival of Scientific Cinema in Ronda, Spain (2008). The Series won the “Bronze Prizm Prize” awarded by the Science Museums of Coruña, Spain (2008).

I was co-script writer and co-scientific advisor of a one hour long program entitled *The five secrets of the office clerk*, about the *Annus Mirabilis* of Einstein. It was produced and broadcasted by ‘Channel 22’, Nov 2009.

OTHER ACADEMIC ACTIVITIES

I am a member of the Editorial Board of *Classical and Quantum Gravity* (IOP, UK) since January 2009.

I am member of the SOC (Scientific Organizing Committee) and LOC for the *GR19* Conference to be held in Mexico City, 2010. I am Local chair for the PASI School on Quantum Gravity to be

held in Morelia, Mexico, June 2010. I was a member of the Scientific Committee for LOOPS'09. I was in the Organizing Committee for *LOOPS'07* held in Morelia, June 2007. I was in the Scientific Committee for *Quantum Gravity in the Americas III* and *LOOPS'05*.

I usually referee papers for *Classical and Quantum Gravity* and *Physical Review D*. I have also refereed papers for the *Physical Review Letters*, *Mexican Journal of Physics* (Mexican Physical Society), *Physical Review A*, *Gen. Rel. Grav.*, *Foundations of Physics*, *Mod. Phys. Lett. A*, *Annals Phys. (NY)* and the *Int. Jour. Mod. Phys. D*.

I usually referee research Grant Proposals for CONACyT (Mexico). I have also refereed for CONICET (Chile) and FOM (Netherlands).

I maintain the *Loop quantum gravity bibliography*, available at gr-qc/0509039.

REFERENCES

Abhay Ashtekar, Pennsylvania State U. (ashtekar@gravity.psu.edu).

Luca Bombelli, U. Mississippi (luca@phy.olemiss.edu).

Donald Marolf, U. California, Santa Barbara (marolf@physics.ucsb.edu).

Guillermo Mena, CSIC (Spain), (mena@iem.cfm.csic.es)

Jorge Pullin, Louisiana State U. (pullin@phys.lsu.edu).

Michael P. Ryan, ICN-UNAM (ryan@nucleares.unam.mx).

Daniel Sudarsky, ICN-UNAM (sudarsky@nucleares.unam.mx).

Thomas Thiemann, AEI, Golm (tthiemann@perimeterinstitute.ca).