

CURRICULUM VITAE

ALBERTO S. CATTANEO

BIOGRAPHICAL DATA

Name: Alberto Sergio Cattaneo
Place of birth: Milan, Italy
Date of birth: June 26, 1967
Citizenship: Italian
Marital status: Married; one child
Languages: Italian, English, German, French
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Resume: <http://www.math.uzh.ch/professur/cattaneo/vita>
Publications: <http://www.math.uzh.ch/professur/cattaneo/publications>
<http://www.math.uzh.ch/cattaneo/allpub.pdf>

EDUCATION

- High-school degree (*maturità scientifica*)
 - Liceo scientifico “A. Volta,” Milan, July 1986.
 - Score: 60/60 (top score)
- Degree in physics (*laurea*)
 - Università degli Studi di Milano, March 22, 1991.
 - Score: 110/110 cum laude.
 - Thesis: *Studio delle proprietà di localizzazione su catene quasiperiodiche mediante gruppo di rinormalizzazione nello spazio reale.* (A Study of the Localization Properties on Quasiperiodic Chains via Renormalization Group in Real Space.)
 - Advisor: Prof. Luciano Girardello
- Ph. D. in theoretical physics
 - Università degli Studi di Milano, November 16, 1995.
 - Final evaluation: Excellent
 - Thesis: *Teorie topologiche di tipo BF ed invarianti dei nodi.* (Topological BF Theories and Knot Invariants.)
 - Advisor: Prof. Maurizio Martellini

Date: October 31, 2009.

EMPLOYMENT RECORD

Positions held.

- Harvard University: Post-doc at the Physics Department (Prof. Arthur Jaffe), September 1, 1995—August 31, 1997.
- Milan University: Post-doc at the Mathematics Department (Prof. Paolo Cotta-Ramusino), September 1, 1997—August 31, 1998.
- Zurich University: *Assistenzprofessor* (Assistant Professor) at the Mathematics Department, September 1, 1998—May 31, 2003.

Long term invitations.

- Nantes University: Guest at the Mathematics Department (Prof. Nathan Habegger), June 1998.
- Harvard University: Guest at the Mathematics Department (Prof. Raoul Bott), September 10—December 9, 2001.
- IHES: March 1—May 31, 2005.

Current position.

Zurich University: *Professor ordinarius* (Full Professor) at the Mathematics Department since June 1, 2003.

Honors.

ICM invited speaker (Section Mathematical Physics), Madrid 2006.

TEACHING EXPERIENCE

Undergraduate and graduate courses. See

<http://www.math.uzh.ch/cattaneo/teach.html>

Invited lectures. In the winter semester 1999-2000, I have given a short course on *The BRST and BV Formalisms* at the Institute for Theoretical Physics of ETH Zurich (organized by J. Fröhlich).

In the Fall Term 2001, I have given a short course on *The BV Formalism, Topological Theories and Deformation Quantization* at the Harvard Mathematics Department (organized by D. Kazhdan).

In March 2002, I have given a minicourse on *The Path Integral Formulation of Kontsevich Product* at the Mathematics Department of Paris 7 (organized by B. Keller [Paris 7] and C. Torossian [ENS]).

In June 2002, I have given a minicourse on *Poisson Sigma Models and Deformation Quantization*, at the Institute for Theoretical Physics of ETH Zurich (organized by J. Fuchs).

At the International Euroschool “Poisson Geometry, Deformation Quantisation and Group Representation,” Brussels, June 13–17, 2003, I have given a minicourse on *Formality and Star Products*.

At the third international workshop “Geometry and Physics” held in Perugia, July 25–29, 2005, I have given a minicourse on *Superformality and Quantization*.

At the “Winter School in Mathematical Physics” held in Les Diablerets, March 26–31, 2006, I have given a minicourse on *Deformation Quantization and Topological Quantum Field Theory*.

ACADEMIC ACTIVITY

Students.*Graduate students.*

- Advisor of Carlo A. Rossi for his Ph. D. thesis in mathematics, successfully defended on June 18, 2002. Title: “Invariants of Higher-Dimensional Knots and Topological Quantum Field Theories.”
- Advisor of Luca Stefanini for his Ph. D. thesis in mathematics, successfully defended on March 17, 2008. Title: “On Morphic Actions and Integrability of $\mathcal{L}\mathcal{A}$ -Groupoids.”
- Advisor of Michael Bächtold for his Ph. D. thesis in mathematics (double doctorate with Prof. A. Vinogradov, U. Salerno) successfully defended on March 9, 2009. Title: “Fold-Type Solution Singularities and Characteristic Varieties of Non-Linear PDEs.”
- Advisor of Florian Schätz for his Ph. D. thesis in mathematics, successfully defended on April 27, 2009. Title: “Coisotropic Submanifolds and the BFV Complex.”
- Co-advisor of Bill Pedrini for his Ph. D. thesis in physics at ETHZ, successfully defended on June 3, 2002. Advisor: J. Fröhlich. Title: “Two Applications of Topological Field Theory in Mathematics and Physics.”
- Co-advisor of Benoît Dherin for his Ph. D. thesis in Mathematics at ETHZ, successfully defended on September 20, 2004. Advisor: Giovanni Felder. Title: “Star Products and Symplectic Groupoids.”

Postdocs.

- Marco Zambon (Ph. D. at UC Berkeley, 2004, with Alan Weinstein), September 2004–December 2007.
- Iakovos Androulidakis (Ph. D. at the University of Sheffield, UK, 2001, with Kirill Mackenzie), September 2005–October 2006.
- Pavel Mněv (Ph. D. at PDMI RAS, Russia, 2008, with Ludwig Faddeev), January–October 2008.
- Camilo Arias Abad (Ph. D. at Utrecht University, 2008, with Ieke Moerdijk and Marius Crainic), January 2009—.

Seminars. I am one of the organizers of the Mathematical Physics Seminar in Zurich: <http://www.math.uzh.ch/cattaneo/talksMP.html>.

Professional service. I have been member of habilitation committees and of hiring committees. I have been referee for various science foundations and journals including Asian J. Math., Commun. Math. Phys., Duke Math. J., J. Geom. Phys., JHEP, J. reine angew. Math., J. Sympl. Geom., Lett. Math. Phys., Nucl. Phys. **B**.

I am in the Editorial Board of

- Int. J. Geom. Methods Mod. Phys.:
<http://www.worldscinet.com/ijgmmp/ijgmmp.shtml>
- Tbilisi Mathematical Journal (TMJ):
<http://ncst.org.ge/Journals/TMJ/>

I am a guest editor (together with Giuseppe Dito, Maxim Kontsevich, and Daniel Sternheimer) of the “Special Issue on Deformation Quantization” of the SIGMA Journal:

[http://www.emis.de/journals/SIGMA/Deformation Quantization.html](http://www.emis.de/journals/SIGMA/Deformation%20Quantization.html)

ORGANIZATION OF CONFERENCES

- (1) “Quantization in algebra and geometry” FIM, Zurich, January 6–9, 2003; with G. Felder (ETHZ): <http://www.math.ethz.ch/felder/Workshop2003/>
- (2) “Groupoids and Stacks in Physics and Geometry” Mathematisches Forschungsinstitut Oberwolfach June 29–July 5, 2003; with P. Xu (PSU): <http://www.mfo.de/cgi-bin/tagungsdb?type=21&tnr=0327a>
- (3) “Mathematical Aspects of String Theory” Centro Stefano Franscini on Monte Verità (Ascona, Switzerland), July 18–23, 2004; with A. Alekseev (Geneva), G. Felder (ETHZ) and J. Fröhlich (ETHZ): <http://www.math.uzh.ch/string-theory>
- (4) “Random Matrices and Other Random Objects,” FIM, Zurich, May 17–21, 2005; with G. Felder (ETHZ) and T. Kappeler (Zurich): <http://www.math.ethz.ch/u/felder/Research/RandomMatrices/>
- (5) “Higher Structures in Geometry and Physics: Conference in Honor of Murray Gerstenhaber’s 80th and Jim Stasheff’s 70th Birthdays,” IHP, Paris, January 15–19, 2007; with P. Xu (PSU) (over 130 participants): <http://www.math.psu.edu/ping/IHP07/>
- (6) “Poisson 2008 School,” July 1–4, 2008; with A. Alekseev (over 90 participants): <http://cib.epfl.ch/hosted/programs/poisson2008/cms/index87f1.php?id=14>
- (7) “Poisson 2008 Conference,” July 7–11, 2008; with A. Alekseev and T. Ratiu (over 200 participants): <http://www.math.uzh.ch/poisson2008/>
- (8) “Higher Structures 2008,” November 3–7, 2008; with A. Alekseev and P. Xu: <http://www.math.uzh.ch/higherstructures2008/>

With Anton Alekseev (Geneva) and Tudor Ratiu (Lausanne), I have organized a semester on Poisson Geometry at the Bernoulli Center in 2008 during which conferences 6, 7 and 8 have taken place:

<http://cib.epfl.ch/hosted/programs/poisson2008/index.html>

With A. Alekseev, C. Arias Abad and P. Xu, I am organizing the 2009 edition of “Higher Structures” in Zurich:

<http://www.math.uzh.ch/higherstructures2009>

The following edition of the “Higher Structure” Conference is forseen (2010 in Vienna) and I will be one of the organizers.

I am one of the coorganizers of the “Winter School in Mathematical Physics,” Les Diablerets, January 31 - February 5, 2010:

<http://www.unige.ch/math/folks/podkopaeva/diablerets2010/index.html>

RESEARCH STAYS

Invitation to conferences. In the last few years, I have been invited as a speaker to the following conferences:

- “Perturbative Quantum Invariants of 3-Manifolds,” *Borel Seminar*, Bern University, Summer Semester 1999.

- “Séminaire Groupes Quantiques,” Institut Henri Poincaré, Paris, June 17, 1999.
- “Deformationsquantisierung singulärer reduzierter Räume,” RiP-Workshop, Mathematisches Forschungsinstitut Oberwolfach, August 2–7, 1999.
- “Non-Commutative Gauge Theory,” Lorentz Center, Leiden, November 22–26, 1999.
- “Nichtkommutative Geometrie,” Mathematisches Forschungsinstitut Oberwolfach, March 26–April 1, 2000.
- “Influence of Physics on Topology,” UCSD, August 14–18, 2000.
- “Conférence Moshé Flato 2000,” Dijon, September 11–14, 2000.
- “BRANE NEW WORLD and Noncommutative Geometry,” Turin, October 2–7, 2000.
- “International Workshop on Noncommutative Geometry and String Theory,” Keio University, Yokohama, Japan, March 16–22, 2001.
- “Journées Solstice d’été 2001: *Théorie des Groupes*,” Institut de Mathématiques de Jussieu, Paris, June 20–22, 2001.
- “Journée de Physique pour l’Institut de Mathématique,” Institut de Mathématiques de Jussieu, Paris, May 3, 2002.
- “Poisson 2002,” IST Lisbon, September 2–7, 2002.
- “Renormalization,” IHES Paris, October 14–18, 2002.
- Miniworkshop on “Quantization of Poisson Spaces with Singularities,” Mathematisches Forschungsinstitut Oberwolfach, January 19–25, 2003.
- International Euroschool and Euroconference “Poisson Geometry, Deformation Quantisation and Group Representation,” Brussels, June 13–22, 2003.
- “Noncommutative Geometry in Mathematics and Physics,” CIRM, Luminy, February 16–20, 2004.
- “The Interplay of Representation Theory, Poisson Geometry and Quantization,” Rome II, April 28–29, 2004.
- “Au delà des algebroides de Lie,” École Polytechnique, Paris, November 2–4, 2004.
- “Geometry and Physics III,” Perugia, July 25–29, 2005.
- “Riemann–Hilbert Problems, Integrability and Asymptotics,” SISSA, Trieste, September 20–24, 2005.
- “Deformations and Contractions in Mathematics and Physics,” Mathematisches Forschungsinstitut Oberwolfach, January 15–21, 2006.
- “Winter School in Mathematical Physics,” Les Diablerets, March 27–31, 2006.
- “Semaine spéciale DEA: Groupes quantiques et quantification par déformations,” IRMA, Strasburg, May 9–12, 2006.
- “Poisson 2006,” Tokyo, June 5–9, 2006.
- “ICM 2006,” Madrid, 22–29, 2006.
- “Poisson Geometry and Applications,” Mathematisches Forschungsinstitut Oberwolfach, April 29–May 5, 2007.
- “Poisson Geometry and sigma models,” Erwin Schrödinger International Institute for Mathematical Physics, Vienna, August 20–24, 2007.
- “Random and integrable models in mathematics and physics,” Paleis der Academieën, Brussels, September 11–15.9, 2007.

- “London Mathematical Society Northern Region Meeting, 2007,” Sheffield, UK, October 24
- “Lie algebroids and Lie groupoids in Differential Geometry,” Bakewell, UK, October 25–27, 2007.
- “Swiss-Russian Seminar on Moduli Spaces and Physics,” Zurich University, December 5–7, 2007.
- “Current Geometry,” Vico Equense, Italy, June 24–26, 2008.
- “Topological Field Theories,” Northwestern University, May 25–29, 2009.
- “XXVIII Workshop on Geometric Methods in Physics,” Białowieża, Poland, June 28–July 4, 2009.
- “Noncommutative geometry in representation theory and integrable systems,” SISSA, Trieste, Italy, July 20–23, 2009.

Other participations in conferences. Other recent participations to conferences include:

- “Mathematics towards the Third Millennium,” *Accademia dei Lincei*, Rome, May 27–29, 1999.
- “Geometry and Quantization of Symplectic Manifolds and Quantum Integrable Systems,” *Centro Stefano Franscini*, Ascona, Switzerland, July 4–9, 1999 (1/2 hour talk).
- “XIII International Congress on Mathematical Physics 2000,” Imperial College, London, July 17–22, 2000 (short talk).
- “Mathematical Challenges of the 21st Century,” UCLA, August 7–12, 2000 (short talk).
- “La 68^{ème} rencontre entre physiciens théoriciens et mathématiciens: *Deformation Quantization*,” IRMA, Strasbourg, May 31–June 2, 2001.
- “Current Developments in Mathematics Conference,” Harvard University, November 16–17, 2001.
- “First Joint International Meeting AMS–UMI,” Pisa, June 12–16, 2002 (1/2 hour talk).

RESEARCH

My fields of interest include mathematical physics, differential geometry and algebraic topology. In particular, my recent research activity covers deformation quantization, knot theory, 3-manifold invariants, spaces of loops and imbeddings, algebraic structures up to homotopy, as well as the relationships between the above and topological quantum field theories.

Research Grants.

- April 1, 1999—March 31, 2001: Swiss National Science Foundation; title of the project: *Integral invariants of knots and manifolds. Differential geometry of loop and path spaces, and topological BF theories.*
- April 1, 2001—March 31, 2003; April 1, 2003—March 31, 2005; April 1, 2005—September 30, 2006; October 1, 2006—September 30, 2008; October 1, 2008—September 30, 2010: Swiss National Science Foundation; title of the project: *Integral invariants of knots and manifolds. Loop and path spaces and topological BF theories. Deformation quantization and Poisson sigma models.*

- January 2007: MISGAM network of the European Science Foundation: partial support for the organization of the conference “Higher Structures in Geometry and Physics: Conference in Honor of Murray Gerstenhaber’s 80th and Jim Stasheff’s 70th Birthdays,” IHP, Paris, January 15–19, 2007, with P. Xu: <http://www.math.psu.edu/ping/IHP07/>
- July 2008: MISGAM network of the European Science Foundation: partial support for the organization of the school and conference “Poisson 2008” July 1–11, 2008, with A. Alekseev and T. Ratiu: <http://www.math.uzh.ch/poisson2008/>
- November 2009: MISGAM network of the European Science Foundation: partial support for the organization of the conference “Higher Structures in Geometry and Physics 2009,” Zurich, November 16–20, 2009, with P. Xu and A. Alekseev: <http://www.math.uzh.ch/conferences/index.php?higherstructures2009>

PUBLICATIONS

See here <http://www.math.uzh.ch/cattaneo/allpub.pdf>
or here <http://www.math.uzh.ch/professur/cattaneo/publications>