

Laura Lea Sacerdote - Curriculum Vitae

Laura Lea Sacerdote is Full Professor in Probability and Mathematical Statistics at the Torino University, Dept. of Mathematics "Giuseppe Peano"

E-mail: laura.sacerdote@unito.it

Web-page: <http://www.laurasacerdote.it/>

ORCID-ID: 0000-0003-2527-5935

EDUCATION and EMPLOYMENT RECORD

1977 Italian Laurea in Physics, "cum laude", Torino University

1978 – 1981: Research grant at Salerno University (Prof Luigi M. Ricciardi advisor).

1981 – 1986: Assistant Professor in Computer Science (University of Salerno and Torino University)

1987 – 1990: Associate Professor of Probability and Mathematical Statistics (Salerno University, Dept. of Computer Science and Application).

1991 – 1999: Associate Professor of Probability and Mathematical Statistics (Torino University, Dept. of Mathematics)

2000 – : Full Professor in Probability and Mathematical Statistics.

RESEARCH INTERESTS

- Diffusion approximations of Markov processes and related First Passage Times problems (multivariate case);
- Space time transformations between processes;
- Point processes and statistical methods to detect dependencies;
- Use of copulas in networks modelling;
- Direct and inverse first passage time (one-dimensional or two dimensional; single boundary or exit from a strip);
- Estimation problem for the parameters of diffusion processes constrained by boundaries;
- Branching processes, their continuous limits and their fractional extensions;
- Neuronal models and neural network models;
- Social networks models
- Information measures and their estimators
- Stochastic and Statistical Models for industrial problems

BIBLIOMETRIC INDICATORS (as on August 30, 2019)

- SCOPUS
NUMBER OF PAPERS: 68
NUMBER OF CITATIONS: 920
H-INDEX: 17
- GOOGLE SCHOLAR
NUMBER OF CITATIONS: 1704
H-INDEX: 21

WOS (from 1985)
NUMBER OF CITATIONS: 669
H-INDEX: 14

SOME FUNDED RESEARCH PROJECTS

- Internalization of the Master’s Degree in Stochastics and Data Science in a framework of excellence” CRT foundation 2017-19
- “Start up of the Master’s degree in SDS” CRT foundation, 2015-17
- “Big Data and Internet of Things” Joint project Torino University and Intesa San Paolo Bank (2015-17)
- “Stochastic and statistical methods for industrial applications” Project funded by Evopricing Company (2016)
- “Stochastic Methods for the information transmission in neural simulated or observed neural networks” PRIN (MIUR) 2008-2012
- “Stochastic and statistical models for applications” Torino University 2013
- “AMALFI: Advanced Methods for the Analysis of Future Internet” Funded by San Paolo Foundation and Torino University (2012-2015)
- “Mathematical methods to analyse the information content of inter-spike time series in small simulated or observed neural networks.”, 2005-2007 project funded by Italian Ministry for Research (PRIN-MIUR)
- “Numerical, analytical and simulation methods in the neuronal signal transmission.”, 2003-2005 (PRIN-MIUR)
- “Coupling of stochastic phenomena with copulae”, 2008 Torino University

SOME RESEARCH VISITS:

Dept. of Statistics, North Carolina State University at Raleigh, NC-US, 1 year (1999-2000); Academy of Sciences Prague, 1 month (2006), Laboratoire de Probabilités et Modèles Aléatoires, Paris VI, 1 month (2008), SAMSI (NC-US), 1 month (2010), AIM at Palo Alto 1 week (February 2012), Nonlinear Dynamics group at Kyoto University, (October 2012), Plymouth University 1 week (February 2015), Academy of Sciences, Prague, (May 2015), University of British Columbia and Banff Center (February 2017), Academy of Sciences, Prague (June 2017, May 2015)

MAIN ADMINISTRATIVE ROLES

- | | |
|------------|---|
| 2000-2006 | Deputy-Head of Mathematics Department, Torino University. |
| 2000- | Member of the executive Board of the Dept. of Mathematics, Torino University |
| 2006 -2009 | Coordinator of Torino Undergraduate and Graduate programs in Mathematics. |
| 2006 -2011 | Coordinator of Torino Graduate Program in Mathematics |
| 2012-2015 | Coordinator of Torino Graduate and Undergraduate programs in Mathematics |
| 2015- | Coordinator of Master’s degree in Stochastics and Data Science of Torino University |
| 2017- | Coordinator of the Industrial Ph D. program in Modeling and Data Science, Torino University |

SOME RESEARCH PROJECTS UNDERTAKEN WITH INDUSTRIAL PARTNERS

- Models for fashion retail prices (with Evopricing);
- Joint research group with INTESA SAN PAOLO
- Reliability study of high vacuum pumps (with Agilent)
- Data study related with Basilea 2 application (with PROXIMA CENTAURI)

My role as coordinator of Industrial Ph D program in Modeling and Data Science as well as the Coordination of Master's degree in Stochastics and Data Science requests relations with companies. These roles imply an involvement scientific and organizative /administrative.

INVITED TALKS (short selection)

"Copulas and shuffles as statistical tools to recognize hidden dependences between neurons

- "Copulas and shuffles as statistical tools to recognize hidden dependences between neurons stimulated by periodic signals, Copenhagen, June 25,2019
- "A consistency problem in neural modelling. Coherence between input and output can be obtained using heavy tails distributions". FCPNLO Workshop, Bilbao 2018
- "On a class of Time-fractional Continuous-state Branching Processes" Salerno, 2017
- "A sharp bound on the expected number of upcrossings of an L2-bounded martingale" Napoli, 2017
- "Integrate and Fire like models with stable distributions" Banff (Canada), 2017
- "The Gamma renewal process as an output of the diffusion LIF neuronal model Forshungs Zentrum Inst. of Comp. Neurosc. and Medicine, 2016
- "Copulas: a powerful tool to investigate dependencies between r.v.s". Mathematics Dept of Plymouth University (Royal Mathematical Society seminars), 2015
- "First passage times of stochastic processes through boundaries and their applications" School of Computing, Electronics and Mathematics, of Plymouth University, 2015
- "On firing rate estimation for dependent interspike intervals" Copenhagen, 2014
- "On Mutual Information estimation" Prague July 3, 2014 (Beyond Shannon workshop)
- "Super Brownian Motion as a Model for Information Dissemination between Mobile Devices" Planet Earth Conference- INDAM, 2013
- "Super Brownian Motion as a Model for Information Dissemination between Mobile Devices" Copenhagen, 2013
- Plenary talk at "Stochastic Dynamics of Small Networks of Neurons" Workshop at American Institute of Mathematics (Palo Alto, CA, US), 2012
- "A Copulas Approach to the Analysis of dependences between Interspikes Intervals" Kyoto, 2012
- "Stochastic Models in Computational Neuroscience", CIRM, Marseille, 2010
- "Stochastic Dynamics" SAMSI, NC-US, 2010

ORGANIZATION OF INTERNATIONAL EVENTS

- I will co-organize the Isaac Newton Institute Programme "Fractional Differential Equations", (with V. Kolokoltsov, J. Lorinczi, E. Nualart and M. Rockner) Cambridge January-April 2021
- Chair of Neural Coding 2018 (Torino, 2018)
- Co-chair of the "First Italian Meeting on Probability and Mathematical Statistics (University and Politecnico of Torino, 2017)
- Chair of the Torino-Juelich Workshop on Computational Neurosciences (in 2012 and 2014)

- Chair of the workshops “Welcome Home” (Torino, 2012, 2013, 2014, 2015, 2016 , 2017, 2108 and 2019)
- Co-chair of the International Meeting Biocomp2012, held in Vietri sul Mare on June 4-8, 2012

REFEREE FOR INTERNATIONAL JOURNALS

Stochastic Processes and their Applications, Journal of Applied Probability, Advances in Applied Probability, Statistics and Probability Letters, Discrete Contin. Dyn. Syst. Ser. B, Mathematical Review, Physica D, Physical Review E, Biological Cybernetics, BioSystems, Ricerche di Matematica, Journal of Statistical Physics, Methodology and Computing in Applied Probability, Journal of Physics A, Mathematical Biosciences, Neural Computation, Scientiae Mathematicae Japonicae, Electronic Journal of Statistics, Mathematical Biosciences for Engineering, Applied Stochastic Models in Business and Industry

PH D STUDENTS

F. Tomassetti Napoli University, 1994

Maria Teresa Giraudo, 1999, University of Milano.

Cristina Zucca, (with F. Pellerrey) 2002 University of Milano,

Roberta Sirovich, (with A.E.P. Villa), 2006 Torino University and University of Grenoble

Alessandro Sicco, 2008 Universtiy of Torino

Donata Bonino, 2009 Torino University

Elisa Benedetto, Torino University 2014

Anan Halabi, Torino University 2017

Ottavia Telve, University & Politecnico of Torino 2018

Amedeo Biolatti Torino University (in progress)

Emanuele Lucrezia (Modeling and Data Science, in progress)

In different periods I was member of the scientific the board of

- Ph. D. Program in Statistics, Numerical Analysis and Computer Science of Milano University
- Ph. D. program in Mathematics of Torino University
- Joint Ph. Program in Pure and Applied Mathematics of University and Polytechnic of Torino.
- Industrial Ph. D. Program in Modeling and Data Science (presently Coordinator of this program)

TRAINING EARLY-STAGE STUDENTS

During my career I devoted strong energies to trainee young PhD and researchers. Among others: M.T. Giraudo, C. Zucca, R. Sirovich, M. Tamborrino, E. Torre, A. Pachon, G. Cerbone, D. Bonino, E. Benedetto, O. Pokora, E. Bibbona, G. Panfilo, L. Andreis.

TEACHING AND SUPERVISION OF FINAL DISSERTATIONS

Courses taught at various levels (undergraduate, graduate and Ph. D.): Probability theory, Statistics, Stochastic processes, Time Series analysis, Cybernetics, Operational Research, Statistics for Biologists, Computer Science, Theory of Information. Supervisor for more than 40 master thesis. I trained many Master’s students toward research. Now they are Ph. D. students, post-Docs or lecturer in prestigious universities.

EVALUATOR ACTIVITY

Evaluator for national projects proposals (PRIN, SIR), for the Italian ANVUR-VQR, and for foreign projects (France, Germany, Denmark). Member of international committees for Ph D defenses (France, Germany) or for professorships (Denmark, Germany, US)

CO-AUTHORS

Petr Lansky (Academy of Sciences, Prague), Cindy Greenwood (University of British Columbia), Isaac Meilijson (Tel Aviv University), David Gilat (Tel Aviv University), Ron Kenett (KPA group), Charles E. Smith (North Carolina State University), Alessandro E. P. Villa (Université de Lausanne), Martin Jacobsen (University of Copenhagen), Sunshuke Sato (Osaka University), R. Rodriguez (INRIA, Marseille), Massimiliano Tamborrino (University of Warwick), Emiliano Torre (ETH, Zurich), Luigi M. Ricciardi (Napoli University), Amelia G. Nobile (Salerno University), Virginia Giorno (Salerno University), Maria Teresa Giraudo (Torino University), Cristina Zucca (Torino University), Roberta Sirovich (Torino University), Nello Balossino (Torino University), Luigi Favella (Torino University), Maria Teresa Reineri (Torino University), Federico Polito (Torino University), Elisa Benedetto (Torino University), Donata Bonino (Astronomical Observatory, Torino), Matteo Sereno (Torino University), Ottavia Telve (Torino University), Enrico Bibbona (Torino Polytechnic), Angelica Pachon Pinzon ((Torino University)), Lorenzo Galleani (Torino Politecnic, Patrizia Tavella (INRIM, Torino), Rosa Maria Mininni (Bari University), Nello Buonocore (Napoli University), Giuseppe Cerbone, Francesca Tomassetti, Mario Gai (OATO, Torino), Pietro Verzelli (Università della Svizzera Italiana), Michele Garetto (Torino University), Anan Halabi (Torino University), L. Andreis (Weierstrass Institute, Berlin)

PAPERS

<http://www.laurasacerdote.it/pubblications.html>