Curriculum Vitae

Name: Mahdieh Tahmasebi
Present Position: Assistant professor
Address of Correspondence: Tarbiat Modares University
email Address: tahmasebi@modares.ac.ir
Nationality: Iranian
Date and Place of Birth: 22/09/1980, Tehran (Iran)

Education

2005-2011   Ph.D. in Mathematics. Major: SDEs. Sharif University of Technology (Tehran, Iran).

2002-2004   M.Sc. in Mathematics. Major: Probability methods in graphs. Sharif University of Technology (Tehran, Iran).

1998-2002   B.S. in Mathematics. University of Shahid Beheshti (Tehran, Iran).

Courses Passed in Ph.D.

Stochastic Analysis, Stochastic Differential Equations, Probability Theory, Semigroup theory for Linear Operators, Financial Mathematics, Advanced Numerical Solution ,
Theory of Partial Differential Equations, Elliptic Differential Equations, Sobolev Spaces

Subject of Research in Ph.D.

Malliavin Calculus and Numerical Solution of SDEs with Monotone Drifts

Research Interests

Malliavin Calculus, Mathematical Finance, Stochastic Optimal Control, Finite and Infinite dimensional Stochastic Equations, Stochastic Analysis, Numerical solution of SDEs.

Lectures in Seminars

1-   M. Tahmasebi and Sh. Zamani. *The Malliavin Calculus and Stochastic Differential Equations*. The 7th Seminar of Mathematical Analysis and its Applications, Arak university, Iran(23-24 Apr 2008).

2. M. Tahmasebi and Sh. Zamani, *The Malliavin Calculus and Numerical solution of Stochastic Differential Equations*, Shiraz university, Iran, The 3th Workshop in Applied Stochastic Processes (11-12 Jun 2008).

3. M. Tahmasebi and Sh. Zamani, Weak Numerical Solution of Stochastic Differential Equations, Isfahan university of Technology, Iran. The 8th Seminar of Differntial Equation, Dynamical Systems and its Applications (19-21 Jul 2008).

4. M. Tahmasebi, Mallaivin Calculus and Applications. Iran, Zanjan, Inistitute for Advanced Studies in Basic Sciences (5 May 2010).

5. M. Tahmasebi, Application of Malliavin Calculus for SDEs with Monotone Drifts. IPM, Tehran, Iran, The 6th International Iranian Workshop on Stochastic Processes (18-20 May 2010).

6. A. Bastani and M. Tahmasebi, Strong Convergence of Split-Step Backward Euler Method for SDEs with Non-smooth Drift, Iran, University of Science and technology,The 7th International Iranian Workshop on Stochastic Processes (30 Nov and 1,2 Dec 2010).

7. M. Tahmasebi, Malliavin Calculus Applied to Finance. Zanjan, Iran, Institute for Advanced Studies in Basic Sciences**,** The 2th International Iranian Workshop on Mathematical Finance (17 Feb 2011).

8-M. Tahmasebi, Malliavin Calculus for Stochastic Differential Equations with Semi-Monotone Drift, IPM, Tehran, Iran, The 9th International Iranian Workshop on Stochastic Processes (25-27 Oct 2011).

9. M. Tahmasebi, Malliavin Calculus and its Applications in Mathematical Finance, 3rd Seminar of Mathematics and Humanities, Allameh Tabatabai University, Tehran, Iran,(23-24 April, 2014).

10. (Invited Lecturer) M. Tahmasebi, Statistical Inferences and Stochastic Optimal Control with Malliavin Calculus, The 13th Workshop on Random Processes and its Applications**,** IPM-Isfahan Branch, Isfahan, Iran, (April 29 - May 1, 2014).

11. M. Tahmasebi, Weighted Integration to solutions of SDEی with Uniformly Elliptic Diffusion, The 10th seminar on Prbability and Stochastic Processes, Yazd University, Iran, (19-20 Aug 2015).

12. M. Tahmasebi, Malliavin Calculus Monte-Carlo Approach in Financial Mathematics, The 2nd FINACT-IRAN Conference on Financial and Actuarial Mathematics, IPM, Tehran, Iran, (15-17 Aug 2015).

Publications:

1-Strong Convergence of Split-Step Backward Euler Method for Stochastic Differential Equations with Non-Smooth Drift, Ali Foroush Bastani, Mahdieh Tahmasebi, *Journal of Computational and Applied Mathematics*, *Volume 236, Issue 7*, *January 2012*, *pp 1903-1918.*

2-Smooth density for the Solution of Scalar SDEs with Locally Lipschitz Coefficients under Hormander Condition, Mahdieh Tahmasebi, *Statistics & Probability Letters*, *Volume 85*, *February 2014*, *Pages 51-62.*

3-Weak Differentiability of Solution to SDEs with Semimonotone Drifts, M. Tahmasebi & S. Zamani, Bull. Iranian Math. Soc., Volume 41 (2015), No. 4, pp. 873-888.

4- An LPV based robust peak-to-peak state estimation for genetic regulatory networks with time varying delay, M. Mohammadian and H. R. Momeni and H. S. Karimi and I. Shafikhani and M.Tahmasebi, Neurocomputing, Volume 160, 2015, pp 261-273.

5- $H^{\square}$ Sampled-data Controller Design for Stochastic Genetic Regulatory Networks, Preprinted on IJEEE, M. Tahmasebi, H. R. Moemni, M. Mohammadian, Iranian Journal of Electrical & Electronic Engineering, Volume 11, No. 3, Sep. 2015.

6- Comments on ﺑ Solving nonlinear stochastic differential equations with fractional Brownian motion using reducibility approach پ [Nonlinear Dyn. 67, 2719ـ2726 (2012)], V. J. Majd, M. Tahmasebi & K. Khandani, Volume 82, Issue 3, 2015, pp 1605-1607.

7- Robust Stabilization of Uncertain Time-Delay Systems with Fractional Stochastic Noise Using the Novel Fractional Stochastic Sliding Approach and its Application to Stream Water Quality Regulation**,** V. J. Majd, M. Tahmasebi & K. Khandani, IEEE Transactions on Automatic Control ▢anuary 2016, DOI: 10.1109/TAC.2016.2594261

8- Integral sliding mode control for robust stabilization of uncertain stochastic time-delay systems driven by fractional Brownian motion, K. Khandani; V. J. Majd and M. Tahmasebi, International Journal of Systems Science Volume 48, No 4, 2017, 828-837.

9- Integration by Parts Formula and Smoothness of Densities of Solutions to SDE's with Monotone Drift and their applications, M. Tahmasebi, Submitted.

10- The multi-scale method for solving nonlinear time space fractional partial differential equations, H. Aminikhah, M. Tahmasebi and M. M. Roozbahani, IEEE/CAA Journal of Automatica Sinica, DOI:10.1109/JAS.2016.7510058.

11- - Numerical solution for the time space-fractional partial differential equations by using wavelet multi-scale method, H. Aminikhah, M. Tahmasebi and M. M. Roozbahani, submitted UPB Scientific Bulletin-Series A-Applied Mathematics and Physics.

Project of my Graduate Students:

1. M. Aieni, Sensitivity of Parameter and Ergodicity of CIR Processes and its Applications, MS.c. Thesis. 2015.

2. Z. Ebrahimi, Backward Stochastic Differential Equations and Construction of Optimal Portfolio in jump diffusion models, MS.c. Thesis. 2015.

2. E. Zalshovey, Multilevel and Adaptive Monte Carlo Methods to Compute Expectation of first exit time and Payoff with free Parameter, MS.c. Thesis. (joint with M.R. Eslahchi)., 2015.

4. J. Ghorbani, On Optimal Proportional Reinsurance and Invesment in a Partial Markovian Regime-Switching Economy, MS.c. Thesis, 2016.

5. F. Alibeygi, Risk Management and Prices of Credir Risky Products under Complete and Incomplete Information, MS.c. Thesis, Jan. 2017.

6. M. Pourheydar, Considering Reinsurence Optimal Control Problem with Dynamic Risk Constraint, MS.c. Thesis, Feb. 2017.

7. S. Ostovari, The Relation between Credit Default Swaps and Financial Stability on Systemic Risk, MS.c. Thesis, (joint with M.A. Rastegar), Nov. 2016.

8. Z. Mardani, Investigating Structural Credit Risk Models under Stochastic Volatility, MS.c. Thesis, (joint with M. Jafari Khaledi), Jan. 2017.

9. M. M. Vakili, Optimal timing for Annuitization in jump diffusion model with Stochastic Volatility, MS.c. Thesis, Feb. 2017.

Participating in Workshops, Competitions and Courses:

-The 34th Iranian Mathematics Conference, Shahrood, Iran (30 Aug-2 Sep 2003)
-The 25th and 26th Mathematics Competitions of IMS. *Institute* for Advanced Studies in Basic Science, *Zanjan*, Iran,
-Workshop on Stochastic Partial Differential Equations. Institute for Advanced Studies in Basic Science, *Zanjan*, Iran, Lecturers: Etienne *Pardoux* (Universite de Provence, France) and Jonathan Mattingly (Duke University, USA) , (29 May- 7 June 2006).
-2nd Workshop on Stochastic Processes, Department of Statistics, AUT (22-24 Oct 2007).
-Course of Malliavin Calculus **:** During in the second trip to Inria.
-Course of Martingale Problems **:** During in the second trip to Inria.

Teaching Experence
 (as Assistant Professor in Tarbiat Modares University)
 - Real Analysis   :Fall 2012-2013, Spring 2015-2016
 - Stochastic differential equations and Stochastic control   :Fall 2012-2013
 - Applied Functional Analysis   :Spring 2013
 - Stochastic Processes   :Fall 2013-2014-2016
 - Financial Mathematics I   :Spring 2014-2015
 - Stochastic Differential Equations   :Spring 2015
 - Financial Mathematics II (Levy Processes)   :Fall 2015
 - Risk Management and Pricing   :Fall 2015
 -Probability and Measure Ttheory   :Fall 2016

(as tutorial and marking in Sharif university)
 -CalculusII   : Spring 2005
 -CalculusII   : Spring 2006
 -CalculusII   : Spring 2007
 -Real Analysis   : Fall 2007
 - Stochastic Process   : Fall 2007
 - Applied Stochastic Process: Fall 2008
 - Stochastic Analysis   : Spring 2008
 - Probability Theory   : Spring 2011
(as TA: tutorial and marking in Tarbiat Modarres university)
 - Probability Theory 2   : Spring 2011
(as TA: tutorial and marking)   (Beheshti university)

Study Opportunities

-   France, Sophia Antipolis, Inria 20 April- 30 May 2009, I was financially supported by France Inria Institute .
-   France, Sophia Antipolis, Inria   1 Dec 2009- 15 Apr 2010, I was financially supported by France Inria Institute .

List of interested subjects to work in future:

1) Compute the conditional value at risk, entropy value at risk and expected short fall in Malliavin framework and its applications in optimal control with Var type constraints.
2) Numerical method based on Malliavin calculus to solve optimal control problem for mean-field process driven by Levy processes and its applications in Finance.
3) Variance reduction method with Malliavin calculus to compute the first exit time of a Levy process (even for SDE with monotone drifts).
4) Stochastic optimal portfolio in Levy models (especially in insurances models) with or without anticipating environment, insider trading and regime-switching: Malliavin approach
5) Malliavin calculus for estimation of time-varying regression of Levy models and applications in finance and signal processing.
6) Considering Positive Harris recurrence property and Ergodicity of Levy-CIR-models.
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