



SOUTH EAST ASIAN MATHEMATICAL SOCIETY

SEAMS SCHOOL PROPOSAL

Stochastic Processes and Its Applications in Finance and Insurance

Institut Pertanian Bogor

19-27 June 2014

Organized by

Scientific Computing Research Group
Financial and Actuarial Mathematics Research Group
Applied Mathematics Research Group
Department of Mathematics
Faculty of Mathematics and Natural Sciences
Institut Pertanian Bogor

2014

SEAMS SCHOOL PROPOSAL

1. The proposed title, place and dates of the SEAMS School

Title of the SEAMS School	: Stochastic Processes and Its Applications in Finance and Insurance
Place	: Bogor
Dates	: 19-27 June 2014

2. Organizers (write the names, place of work, and email address, if you have more than two then add the necessary lines)

1. Name	: I Wayan Mangku
Institution	: Dept. Mathematics, Fac. Mathematics and Natural Sciences, Institut Pertanian Bogor
Email and Phone	: mangku@gmail.com ; +62-251-625276
2. Name	: Budhi Artha Surya
Institution	: School of Management and Business, Institut Teknologi Bandung
Email and Phone	: budhi.surya@sbm.itb.ac.id ; +62 813 8035 2536
3. Name	: Agah D. Garnadi
Institution	: Dept. Mathematics, Fac. Mathematics and Natural Sciences, Institut Pertanian Bogor
Email and Phone	: agah.garnadi@gmail.com; +62-251-625276

3. Short Description of the Scientific Content (max 100 words)

<p>The main aim of SEAMS School in Stochastic Processes in Finance and Insurance is introducing the students to the basic theory and current research in Risk Theory. It is also explored in this context is Copula.</p> <p>The school will focus on the following courses :</p> <ol style="list-style-type: none">1. Reviews in Stochastic Processes, Speakers : I Wayan Mangku2. Crammer-Lundberg model of Risk (Classical Risk Theory), Speakers : Adhitya Ronnie3. Gerber-Shiu Theory, Speaker : Budhi Artha Surya4. Copula , Speaker : John van der Hoek5. Software for Stochastic Processes simulation : Agah D. Garnadi <p>After this course, the participants is expected be well prepared to attends one of the CIMPA Schools in 2015, SAAM 2015, Stochastic Analysis and Applications Which will be held in Mongolia, in July-August 2015 http://smcs.num.edu.mn/saam2015/</p>

4. The speakers of the school (names, address, emails)

1. Prof. Dr. I Wayan Mangku, MAppSc, Dept. Mathematics, Institut Pertanian Bogor, Indonesia; mangku@gmail.com
2. Prof. J van der Hoek, University of South Australia, Adelaide, Australia; John.vanderHoek@unisa.edu.au
3. Dr. Budhi Artha Surya, MSc, School of Business and Management, Institut Teknologi Bandung, Indonesia; budhi.surya@sbm.itb.ac.id
4. Dr. Adhitya Ronnie Effendie, MSc, Dept. Mathematics, Universitas Gadjah Mada, Indonesia; adhityaronnie@ugm.ac.id
5. Agah D. Garnadi., GradDipSc, Dept. Mathematics, Institut Pertanian Bogor, Indonesia; agah.garnadi@gmail.com

5. Describe in a few lines the local institution related to this school, including the main academic program and its strength. Give also the Internet site of the local institutions.

Dept. Mathematics, Institut Pertanian Bogor organizing undergraduate programme in Mathematics and graduate study in Applied Mathematics. The department offering courses in financial and actuarial mathematics, even can be claimed as one of the earliest offering such sub-specialties. Furthermore, the department also run credits earning scheme for actuarial professions under the auspices of Indonesian Actuarial Society.

6. Provide information about the expected participants. The number and the distribution of expected participants.

The expected participants are undergraduate or first year students with sufficient background in Probability and Mathematical Statistics in their third year of their undergraduate study. The total of up to 35 students, composing of 20 undergraduate students and 15 graduate students are coming from Indonesia and ASEAN countries

Describe the objectives and the program of the proposed school, including the courses, speakers, abstracts (8 lines each) and tentative schedules for each course.

Objectives of the School

1. To introduce students to the basic theory and research in Risk Theory and the use of Copula in financial and actuarial mathematics;
2. To provide young researchers with sufficient knowledge and background to start their research in Risk Theory.
3. To facilitate contacts between mathematicians working in these areas and the students coming to the School.

The School will introduce students to Risk theory and its modern theory. The school will stimulate a good research milieu in the area of Stochastic Processes in Finance and Insurance, particularly in Indonesia. The school can also stimulate an improvement of the quality of our undergraduate and master programs in the area of Stochastic Processes in Finance and Insurance. This is because of the engagement of undergraduate and master students in this school will be high. This school facilitates an opportunity to meet speakers/researchers who is actively working in the area. This opportunity is seldom happens and expensive to hold in Indonesia. This opportunity is very likely to induce further advances and open new directions of research in the area.

After this school, the participants is expected be well prepared to attends one of the CIMPA Schools in 2015, SAAM 2015,

Stochastic Analysis and Applications

which will be held in Mongolia, in July-August 2015

The school will consists of the following courses :

1. Reviews in Stochastic Processes, Speakers : I Wayan Mangku
2. Crammer-Lundberg model of Risk (Classical Risk Theory), Speakers : Adhitya Ronnie
3. Gerber-Shiu Theory, Speaker : Budhi Artha Surya
4. Copula , Speaker : John van der Hoek
5. Software for Stochastic Processes simulation : Agah D. Garnadi

Speakers:

1. Prof. Dr. I Wayan Mangku, MAppSc, Dept. Mathematics, Institut Pertanian Bogor, Indonesia
2. Prof. J van der Hoek, University of South Australia, Adelaide, Australia
3. Dr. Budhi Artha Surya, MSc, School of Business and Management, Institut Teknologi Bandung, Indonesia
4. Dr. Adhitya Ronnie Effendie, MSc, Dept. Mathematics, Universitas Gadjah Mada, Indonesia
5. Agah D. Garnadi., GradDipSc, Dept. Mathematics, Institut Pertanian Bogor,

Indonesia

Abstracts.

1. Reviews in Stochastic Processes.

To refresh the participant we will give a review lectures in Stochastic Processes. Provide some important distribution used in Risk Theory and several stochastic processes arising in applications in Finance and Insurance. We will survey some results on estimating the intensity of a cyclic Poisson process, an important process occurs in insurance modeling. We will also discuss estimation issues, both theoretically and by simulation.

2. Crammer-Lundberg model of Risk Theory

We will provide a crash course on Crammer-Lundberg model of Risk Theory, which is a standard model used in insurance industry. The course will covers Individual Risk Model, Collective Risk Model, and Risk Theory. Which are covering materials on: Models for Individual Claims Random Variables, Sums of Independent Random Variables, Approximation for the Distribution of the Sum, Application to Insurance. The Distribution of Aggregate Claims. The Distribution of Claim Frequency. The Distribution of Claim Severity. Properties of Certain Compound Distribution. Approximation to the Distribution of Aggregate Claims, A Discrete Time Model of Ruin, A Continuous Time Model of Ruin, Ruin Probabilities and the Claim Amount Distribution, The First Surplus below the Initial Level, Join Distribution of the time to ruin and the number of claims until ruin.

3. Gerber-Shiu Theory

In this course, a modern insurance risk theory through the eyes of excursion theory for Lévy processes will be given.

To keep the technical requirements to a minimum, the course will deal largely with the case of the classical Cramer-Lundberg process, developing in detail the Poissonian structure of sojourns from the maximum, moving towards the end of the course into a more general Lévy set-up.

The objective is to go far beyond the classical ruin problems, into the realms of dividend strategies which correspond to refracted, reflected and super- and sub-reflected Lévy processes as well as focusing on the importance of the modern theory of scale functions for spectrally negative Lévy processes in the analysis.

Much of what will be presented will cover, at the appropriate level, the main developments that have occurred in the last 5-10 years in the research literature.

The course will assume core basic knowledge of Markov processes, knowledge of measure theoretic probability as well as core facts from analysis.

4. Copula in Finance and Insurance

We will provide a series lecture on copula and its application in finance and

insurance. The lectures will be based on readings of recent results available at the Univ. South Australia.

5. Software for Stochastic Processes Simulation

In this series of session we provide lectures and hands on exercises using R, an open source statistical software. The participant will be introduced to basic command in R, and R-package. Later on, the lectures will be synchronized with each three lectures, and it is expected that the student will get some hands on experiences to simulate stochastic processes in the lab. We also going to introduce the use of aktuar package, which is widely used in classical Risk Theory. Later on, the participants will learned how to simulate Levy processes and integrated the process to the aktuar package.

If there is time, we will deal with some completely new Monte-Carlo simulation methods for Levy Processes which is the basic theoretical foundation for Gerber-Shiu Risk model.

It should be noted that this session is not a lecture per se, rather it is a simulation problem solving session of the other lectures.

7. Provide information about provisional budget and the expected funding.

NO	ITEM	TOTAL (euros)
1	TICKETS	
	Overseas Students : 10 persons	3400
	Speakers 1 person (John vanderHoek)	1000
2	ACCOMMODATION	
	Overseas students 10 persons- 9 days	1969
	Speakers 1 person - 9 days	197
	Indonesian speakers 2 Indonesian speakers form other cities	394
3	FOOD EXPENSES	
	Lunch + 2 snacks during school : 7 days	985
	school dinner	188
	lunch and snack during retreat	140
4	LOCAL TRANSPORT	
	Jakarta-Bogor 11 persons @Rp 250000	172
	Coaster rental for retreat 1 day	94
5	SUPPLIES AND PRINTINGS	
	Program, lecture notes and Kits	94
6	SECRETARIAT AND LOCAL COMMITTEE EXPENSES	180
	TOTAL	8813
Funding Distribution		
No	ITEM	TOTAL (euros)
1	CIMPA	4500
2	Department of Mathematics IPB	2713
3	AMSI (Aust.Math.Sci.Inst.)	1600
	TOTAL	8813

NOTE:

- The local (Indonesian) students, they have to arrange their own accommodation during the school. We are hoping that we able to secure some vacant room in the students dormitory during the schools.
- The AMSI fund will be solely allocated for John van der Hoek.

8. Provide CVs for the organizers.

CURRICULUM VITAE

Prof. Dr. I Wayan Mangku

Born : March 5, 1962, at Ababi, Bali, Indonesia
Citizenship : Indonesia
Address : Department of Mathematics
Bogor Agricultural University
Jl. Meranti, Kampus IPB Darmaga Bogor
16680, Indonesia
E-mail: *wayan.mangku@gmail.com*

Education:

- Sarjana degree in Statistics from Bogor Agricultural University (1985).
- Master degree in Applied Mathematics from Curtin University of Technology, Western Australia (1993).
- Ph.D. degree in Mathematics, University of Amsterdam (2001).

Publications:

1. Mangku, I W., and Ganeshanandam, S. (1991). Bootstrap error rates in discriminant analysis, paper presented at *International Conference of Statistical Computing*, July 1-5, 1991, Queensland, Australia.
2. Mangku, I W. (1992). *Error Rate Estimation in Discriminant Analysis: Another Look at Bootstrap and Other Resampling Techniques*. Master Thesis, Curtin University of Technology, Perth, Western Australia.
3. Mangku, I W., Helmers, R., and Zitikis, R. (1998). Nonparametric estimation of the period and intensity function of a cyclic Poisson point process. Paper presented at *Stochastic Conference*, August 23-28, 1998, Prague, Czech Republic.
4. Mangku, I W. (1999). Nearest neighbor estimation of the intensity function of a cyclic Poisson process. *CWI Report PNA-R9914*, CWI-Amsterdam, The Netherlands.
5. Mangku, I W., Helmers, R., and Zitikis, R. (1999). Estimation of the local and global intensity and the period of a cyclic Poisson process. Invited paper presented at University of Manitoba, November 16, 1999, Winnipeg, Canada.

6. Helmers, R., and Mangku, I W. (2000). Statistical estimation of Poisson intensity functions. *Proceedings of the SEAMS - GMU International Conference on Mathematics and Its Applications*, Yogyakarta, July 26-29, 1999, p. 9-21.
7. Mangku, I W. (2001). Estimating the Intensity of a Cyclic Poisson Process, Ph.D Thesis, University of Amsterdam, The Netherlands.
8. Helmers, R. and Mangku, I. W. (2003). On estimating the period of a cyclic Poisson process. *Mathematical Statistics and Applications: Festschrift for Constance van Eeden*. (Editors: Marc Moore, Sorana Froda and Christian Leger), IMS Lecture Notes - Monograph Series, Volume 42, 345-356.
9. R. Helmers, I W. Mangku, R. Zitikis. (2003). Consistent estimation of the intensity function of a cyclic Poisson process. *J. Multivariate Anal.*, 84, 19-39.
10. Mangku, I W. (2004). Estimating the probability of misclassifications in two-groups discriminant analysis. *Journal of Mathematics and Its Applications*, **3**, No.1, 1-10.
11. Mangku, I W. (2004). Application of bootstrap method on estimation of the error rates in discriminant analysis. *Journal of Mathematics and Its Applications*, **3**, No.2, 1-10.
12. R. Helmers, I W. Mangku, R. Zitikis. (2005). Statistical properties of a kernel-type estimator of the intensity function of a cyclic Poisson process. *J. Multivariate Anal.*, 92, 1-23.
13. Mangku, I W., and Helmers, R. (2005). Estimating the intensity of a cyclic Poisson process in the presence of linear trend. *Proceedings of the 55-th International Statistical Institute Conference*, April 5-12, 2005, Sydney, Australia.
14. Mangku, I W. (2005). Statistical estimation of a cyclic Poisson intensity function. *Proceedings of International Conference on Applied Mathematics 2005 (ICAM05)*, ITB Bandung, August 22-26, 2005, p. 109-116.
15. Mangku, I W., Widiyastuti, I., and Purnaba, I. G. P. (2005). Estimating the intensity in the form of a power function of an inhomogeneous Poisson process. *Journal of Mathematics and Its Applications*, **4**, No.1, 51-57.
16. Mangku, I W. (2005). A note on estimation of the global intensity of a cyclic Poisson process in the presence of linear trend. *Journal of Mathematics and Its Applications*, **4**, No.2, 1-12.
17. Mangku, I W. (2006). Weak and strong convergence of a kernel-type estimator for the intensity of a periodic Poisson process. *Journal of Mathematics and Its Applications*, **5**, No.1, 1-12.
18. Mangku, I W. (2006). Asymptotic normality of a kernel-type estimator for the intensity of a periodic Poisson process. *Journal of Mathematics and Its Applications*, **5**, No.2, 13-22.

19. R. Helmers, I W. Mangku, R. Zitikis. (2007). A non-parametric estimator of the doubly periodic Poisson intensity function. *Statistical Methodology*, 4, 481-492.
20. Mangku, I W. (2007). Balanced bootstrap estimators for the probability of misclassifications in discriminant analysis. *Journal of Mathematics and Its Applications*, **6**, No.1, 11-22.
21. Mangku, I W., Syamsuri and Herniwati (2007). Consistency of kernel-type estimators for the first and second derivatives of a periodic Poisson intensity function. *Journal of Mathematics and Its Applications*, **6**, No.2, 47-55.
22. Mangku, I W. (2007). A kernel-type estimator of the intensity of a double periodic Poisson process. Invited paper presented at *Joint Statistics Seminar, The Hong Kong University of Science and Technology*, November, 9-th, 2007.
23. Mangku, I W. (2008). Consistency of a uniform kernel estimator for intensity of a periodic Poisson process with unknown period. *Journal of Mathematics and Its Applications*, **7**, No.2, 31-37.
24. Sunusi, N., Darwis, S., Triyoso, W., and Mangku, I W. (2008). Estimating the intensity of point process models applied to earthquake prediction. *Mathematics Journal Universiti Teknologi Malaysia*. Special Edition Part II, 405-411.
25. Sunusi, N., Darwis, S., Triyoso, W., and Mangku, I W. (2008). The Brownian passage time model for earthquake recurrence probabilities. *Far East Journal of Mathematical Science*, **29**, Issue 3, 711-718.
26. Helmers, R., and I W. Mangku (2009). Estimating the intensity of a cyclic Poisson process in the presence of linear trend. *Annals Inst. of Statistical Mathematics*. **61** (3), 599-628.
27. Mangku, I W., Siswadi, Budiarti R. (2009). Consistency of a kernel-type estimator of the intensity of the cyclic Poisson process with the linear trend. *Journal of the Indonesian Mathematical Society*, **15** No.1, 37-48.
28. Mangku, I W. (2009). Strong convergence of a uniform kernel estimator for intensity of a periodic Poisson process with unknown period. *Journal of Mathematics and Its Applications*, **8** No.1, 1-11.
29. Mangku, I W. (2009). Convergence of MSE of a uniform kernel estimator for intensity of a periodic Poisson process with unknown period. *Journal of Mathematics and Its Applications*, **8** No.2, 1-11.
30. Darwis, S., Gunawan A. Y., Mangku, I W., Sunusi, N., and Wahyuningsih, S. (2009). Updating seismic renewal model. *Far East Journal of Theoretical Statistics*, **27**, 1, 101-112.
31. Darwis, S., Sunusi, N., Gunawan A. Y., Mangku, I W., and Wahyuningsih, S. (2009). Single decrement approach for estimating earthquake hazard rate. *Advances and Applications in Statistics*, **11**, 2, 229-237.

32. Rumiati, A.T., Notodiputro K.A, N., Mangku, I W., dan Sadik , K. (2009). Metode Bayes empirik untuk pendugaan angka melek huruf di tingkat kecamatan, studi kasus Kabupaten Sumenep Propinsi Jawa Timur. *The Journal for Technology and Sciences*, **20**, 4, 1-8.
33. Mangku, I W. (2010). Consistent estimation of the distribution function and the density of waiting time of a cyclic Poisson process with linear trend. *Far East Journal of Theoretical Statistics*, **33**, 81-91.
34. Mangku, I W. (2010). Monte Carlo evaluation of error rate estimators in discriminant analysis under multivariate normal data. *Journal of Mathematics and Its Applications*, **9** No.1, 1-14.
35. Mangku, I W., Siswadi, Budiarti R. (2011). Asymptotic approximations to the bias and variance of a kernel-type estimator of the intensity of the cyclic Poisson process with the linear trend. *Journal of the Indonesian Mathematical Society*, **17** No.1, 1-9.
36. Mangku, I W. (2011). Estimating the intensity obtained as the product of a periodic function with the linear trend of a non-homogeneous Poisson process. *Far East Journal of Mathematical Science*, **51**, No.2, 141-150.
37. Helmers, R., and Mangku, I W. (2012). Predicting a cyclic Poisson process. *Annals Inst. of Statistical Mathematics*. **64**, 1261-1279.
38. Rumiati, A.T., Notodiputro K.A, N., Sadik, K. and Mangku, I W. (2012). Empirical Bayesian Method for the Estimation of Literacy Rate at Sub-district Level, Case Study: Sumenep District of East Java Province. *The Journal for Technology and Sciences*, **23**, 1, 1-7.
39. Ruliyat, Mangku I.W. and Purnaba I.G.P. (2013). Consistent estimation of the mean function of a compound cyclic Poisson process. *Far East Journal of Mathematical Sciences*, **77**, 2, 183-194.
40. Jajang, Saefuddin, A., Mangku, I W., Siregar, H. (2013). Asymptotic normality of modified local Getis statistic. *Far East Journal of Mathematical Science*, **80**, No.2, 155-167.
41. Mangku, I W., Budiarti, R., Taslim, Casman. (2013). Estimating the intensity obtained as the product of a periodic function with the quadratic trend of a non-homogeneous Poisson process. *Far East Journal of Mathematical Science*, **82**, No.1, 33-44.
42. Mangku, I W., Ruliyat, Purnaba, I.G.P. (2013). Statistical properties of an estimation for the mean function of a compound cyclic Poisson process. *Far East Journal of Mathematical Science*, **82**, No.2, 227-237.

43. Hutabarat, I. M., Saefuddin, A., Djuraidah, A., Mangku, I W. (2013). Estimating the parameters geographically weighted regression (GWR) with measurement error. *Open Journal of Statistics*, **3**, 417-421.

Lectures:

- I gave lectures in Yogyakarta, Prague, Winnipeg, Amsterdam, Sydney, Hong Kong and Bandung and I stayed a month at the University of Manitoba, Winnipeg, in the fall of 1999, visiting R. Zitikis.
- Senior lecturer KNAW research workshop 'Computer-intensive statistics' (EPAM project 'Statistics and Applied Probability', project-leader R. Helmers), June 3-29, 2002, Bandung Institute of Technology, Bandung.

CURRENT OFFICE Assistant Professor (As of January 2010)
 Quantitative Finance and Risk Management
 School of Business and Management *Email:* budhi.surya@sbm-itb.ac.id
 Bandung Institute of Technology *Mobile:* +62 813 8035 2536
 10 Ganesha St., Bandung 40132, Indonesia

INTERESTS Interested in applying probability theory in solving problems in financial economics theoretically and numerically. In particular, using Lévy processes in modeling the uncertainty.

WORKING EXPERIENCE **Bank of America, N. A., Singapore Office and Charlotte**
(Assistant) Vice President; Quantitative Finance Analyst January 2007 - December 2009

Reporting directly to the Head of Quantitative Risk Management in USA; Responsible for handling financial engineering / modeling and design issues with quantitative risk management solution, and implementation of the Basels Framework and Economic Capital. Developed and implemented credit risk models using both structural and intensity (reduced-form) approaches using non-standard loss distribution. The main emphasis was on modeling the dynamics of default intensity. The methods are currently applied to manage Bank of America's consumer credit portfolio: *Mortgages, Home equity Line of Credit (HELOC), Credit Card, Small Business, and Consumer Credit Lending* products. Developed, calibrated, and backtested *default probability, prepayment, and loss-given default* models using the aforementioned approaches and by incorporating economic factors. Developed *optimal capital allocation* of (credit risk) portfolio subject to given risk measures such as *standard deviation, value-at-risk (VaR)* and *expected shortfall*. Investigated the use of *copula-based Monte Carlo pricing* and maximum likelihood estimation of parametric distributions of the joint default times to model credit spread for *securitized pool of loans, credit default swaps (CDS), multiname default credit swaps* and *collateral debt obligation (CDO)*. Developed pricing and hedging strategy for consumer and financial products using non-standard methodology.

Beside daily work activity, I was also actively involved in supervising a few graduate (PhD) students from the Statistics Department and Business School of the University of Michigan, Ann Arbor, on their summer internships at Bank of America, N. A., in Charlotte.

In October 2008, I was **granted H1B USA Work Visa** for a job promotion to the level **Vice President** at the Bank of America Corp. Head Quarter in Charlotte, North Carolina.

EDUCATION • **Ph.D (Probability Theory/Financial Mathematics), 15 January 2007**
Obtained from The University of Utrecht, Utrecht, The Netherlands.

Ph.D Dissertation : *Optimal Stopping Problems Driven by Lévy Processes and Pasting Principles.* (Successfully defended on 15 January 2007 at The University of Utrecht.)

Advisor 1 : Prof. Dr. Andreas E. Kyprianou,
 Department of Mathematical Sciences, the University of Bath, United Kingdom.

Advisor 2 : Prof. Dr. Richard D. Gill,
 Mathematical Institute, the University of Leiden, The Netherlands.

PhD research was central around Lévy process and its role in: fluctuation and excursion theory, optimal stopping problem, pasting principles, free-boundary problem and its numerical computation, American options, credit risk, endogenous default, optimal capital structures, martingale theory and stochastic calculus and analysis.

• **Ir. in Applied Mathematics, 31 August 2001**
Obtained from The University of Twente, Enschede, The Netherlands.

• **Postgraduate Certificate in Masterclass Programme in Mathematical Finance.**
Obtained from the Netherlands Mathematical Research Institute, The Netherlands.
 (Graduated with the highest grades (8.89/10) among other students. **22 June 2001**)

In this postgraduate programme, advanced courses like measure and probability theory, martingales, stochastic analysis (calculus), financial time series analysis, interest rate models, continuous-time models in mathematical finance were studied extensively.

- **MSc. in Systems and Control**, **June 2000**
Obtained from The University of Twente, Enschede, The Netherlands.

The study was majoring in stochastic optimal control and filtering theory. The program was completed with a thesis on nonlinear filtering estimation of stochastic volatility. Thesis Advisor: Prof. Dr. Arunabha Bagchi and Prof. Dr. Michel Vellekoop.

HONOURS

- 11 - 13 November 2013. **Invited Visitor**, Department of Finance and Accounting, University of Twente, Enschede, The Netherlands.
- 22 - 27 October 2013. **Invited Visitor and Talk**, Department of Risk and Stochastic, London School of Economics and Political Sciences, London, United Kingdom.
- 31 October 2013. **Invited Talk**, Frankfurt MathFinance Institute monthly talk held at the House of Finance of Goethe University of Frankfurt, Frankfurt, Germany.
- 1 October - 30 November 2013. **DAAD Short-Term Research Scholar** at Frankfurt MathFinance Institute, Goethe University of Frankfurt, Frankfurt, Germany.
- 5 - 12 December 2012. **Invited Visitor** at Center for Mathematical Modeling and Scientific Computing of National Chiao Tung University, Hsincu, Taiwan.
- 7 - 9 December 2012. **Invited Speaker** at Mathematical Conference and Annual Meeting of the Taiwan Mathematical Society held at National Chiao Tung University, Taiwan.
- 7 September 2012. **Invited Speaker** on *Topics in Lévy and Jump Processes*, Organized by Center for Finance and Insurance (CFI) of Osaka University, Osaka, Japan.
- 2 - 5 September 2012. **Invited Speaker** on *International Conference on Mathematical Finance and Related Issues*, organized by CFI of Osaka University, Osaka, Japan.
- 8 - 9 March 2012. **Invited Speaker** on *International Workshop on Stochastic Processes and Applications*, National Center for Theoretical Sciences, Tsing Hua University, Taiwan.
- 2007 - 2008 **Postdoctoral Scholarship** from The Australian National University, Canberra, Australia. Declined due to the decision of joining Bank of America, N. A.
- February 2003 - February 2007, **Full Ph.D. scholarship** from The University of Utrecht, Utrecht, The Netherlands. Ph.D. thesis was successfully defended on 15 January 2007.
- August 2000 - June 2001, **Full scholarship** from The Netherlands Mathematical Research Institute to pursue Master Class (M.Sc.) Programme in Mathematical Finance.
- August 1998 - June 2000, **Full MSc scholarship** from the Royal Netherlands Academy of Arts and Sciences executed at The University of Twente, Enschede, The Netherlands.
- October 1997, Bandung Institute of Technology: **graduated with Cum Laude**.
- September 1992, **The First Prize**, Mathematics Competition for Senior High School Students in West Sumatra awarded by Padang Institute of Pedagogical Studies.

THESES AND DISSERTATION

- *Optimal Stopping Problems under Lévy Processes and Pasting Principles*. PhD thesis, The University of Utrecht, Utrecht, The Netherlands. Defended on 15 January 2007.
- *Stochastic Control Problems of Long Term Optimal Investment in the Presence of Non Traded Risks*. PhD thesis research project, Tilburg School of Economics and Management, Tilburg University, Tilburg, The Netherlands. Completed in Oktober 2002.
- *BSDE and Their Application to Hedging and Portfolio optimization Problems Under Transaction Costs*. Test-problem paper for the Netherlands Mathematical Research Institute Postgraduate programme in Mathematical Finance. Completed in June 2001.
- *Estimation of Stochastic Volatility in the Hull-White Model Using Nonlinear Filtering*. MSc thesis, The University of Twente, Enschede, The Netherlands. June 2000.

PUBLISHED AND SUBMITTED ARTICLES

- **B.A. Surya** and K. Yamazaki¹. (2014). *Optimal Capital Structure with Scale Effects under Spectrally Negative Levy Models*. To appear in **International Journal of Theoretical and Applied Finance**, World Scientific, Singapore.

¹Department of Mathematics, Kansai University, Japan.

- **B.A. Surya** and R. Kurniawan². (2014). *Optimal Portfolio Selection Based on Expected Shortfall Under Generalized Hyperbolic Distribution*. To appear in **Asia-Pacific Financial Markets**, Springer-Verlag, New York.
- **B.A. Surya**. (2013). *Finite Maturity Optimal Stopping with Running Cost, Stopping Cost and Terminal Gain Under Lévy Processes*. Submitted for publication.
- **B.A. Surya**, A. Rahadi and R. Juliarto. (2011). *Optimal Investment and Consumption Strategies for Small Investor Using Bellmans Principle of Optimality*³. Proceedings of the 2011 International Conference of Electrical Engineering and Informatics, Bandung, Indonesia. Proceeding published by **IEEE Xplore**.
- **B.A. Surya**. (2011). *Two-dimensional Hull-White Model for Stochastic Volatility and its Nonlinear Filtering Estimation*. **Procedia of Computer Science**, Elsevier, Vol. 4, p. 1431-1440.
- **B.A. Surya**. (2008). *Evaluating Scale Functions of Spectrally Negative Lévy Processes*. **Journal of Applied Probability**, Vol. 45, No. 1, p. 135-149.
- **B.A. Surya**. (2007). *An Approach for Solving Perpetual Optimal Stopping Problems Driven by Lévy Processes*. **Stochastics: An International Journal of Probability and Stochastic Processes**, Vol. 79, No. 3-4, p. 337-361.
- A.E. Kyprianou and **B.A. Surya**. (2007). *Principles of Smooth and Continuous Fit in the Determination of Endogenous Bankruptcy Levels*. **Finance and Stochastics**, Vol. 11, No. 1, p. 131-152.
- A.E. Kyprianou and **B.A. Surya**. (2007). *A Note on the Change of Variable Formula with Local Time-Space for Bounded Variation Levy Processes*. **Seminaire de Probabilité XL**, Lecture Notes in Mathematics, No. 1899, p. 97-104.
- A.E. Kyprianou and **B.A. Surya**. (2005). *On the Novikov-Shiryayev Optimal Stopping Problem in Continuous Time*. **Electronic Communications in Probability**, Vol. 10, p. 146-154.

RESEARCH
GRANTS

- DAAD Short-Term Research Scheme, 1 October - 30 November 2013, €4000.
- Ministry of Higher Education, Indonesia, May- November 2013, ± \$ 5000.

MEMBERSHIP

Member of Academic Advisory Board, *Center for Risk Management Studies Indonesia*.
<http://www.crmsindonesia.org/>

ACADEMIC
EXPERIENCE

- Beside doing PhD research works, some teaching activities were performed during the academic years 2003 - 2005 at the Mathematical Institute of Utrecht University. Shared responsibility for tutorial classes, exams, homework assignments, and grades. Please contact Dr. Thijs Ruijgrok at ruijgrok@math.uu.nl for further details on teaching assessment.
- Visiting PhD student at the Department of Mathematical and Computer Sciences, The Heriot-Watt University, Edinburgh, Scotland, 15-30 November 2005.

NUMERICAL
LITERATE

- \LaTeX , MAPLE, MATLAB, Finite difference, FFT, Monte Carlo simulation

REFERENCES

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