

of Research for Development (IRD, France).

- Bilateral agreement with the University of Limoges (France) in exchange of students, scientific, academic and technical information, materials; joint research; joint academic and scientific activities.

### Workshops/ Conferences

9 workshops, conferences have been organized by the VIASM since July 2016:

- Workshop on Asymptotic problem in harmonic analysis and singularity theory (1st meeting), July 18-19, 2016.
- Workshop on Asymptotic problem in harmonic analysis and singularity theory (2nd meeting), August 1-4, 2016 in Tuan Chau (Quang Ninh province).
- Workshop on Stochastic processes - numerical methods and related topics, August 22-25, 2016.
- VIASM Annual Meeting 2016, August 27, 2016.
- Variational Analysis and Optimization Theory, November 28, 2016.
- Homotopy theory and representation theory, December 3-5, 2016 in Tuan Chau (Quang Ninh province).
- ASIACRYPT 2016, December 4-8, 2016 at InterContinental Hanoi Westlake Hotel.
- Hydrological problems of the Mekong River System, December 9, 2016.
- Vietnamese-French Joint Conference on Applications of Mathematics to Ecology, Bio-economics, Epidemiology and Healthcare, December 12-15, 2016 in Hanoi and Tuan Chau (Quang Ninh province).

### Vietnamese-French Joint Conference on Applications of Mathematics to Ecology, Bio-economics, Epidemiology and Healthcare (December 12-15, 2016)

The Vietnamese-French Joint Conference on Applications of Mathematics to Ecology, Bio-economics, Epidemiology and Healthcare took place in Hanoi and Tuan Chau (Quang Ninh) from December 12 to December 15, 2016 and attracted 52 participants.

The aim of the conference was to create a forum for researchers and students to exchange methods, new ideas, results and perspectives in applications of mathematics to ecology, bio-economics, epidemiology and healthcare.

This conference could be considered as the first scientific activity in the context of the collaboration between VIASM and Research Institute for Development (IRD, France).

The signing ceremony of the cooperation between VIASM and IRD took place at VIASM in September 2016.

### Special Programs

4 public lecture, 3 special schools and 7 mini-courses have been organized:

- Mini-course "Fluid Flows at a High Reynolds number" by Assoc. Prof. Nguyen Trong Toan (Pennsylvania State University, USA) July 5-8, 2016.
- Mini-course "Advanced Stationary Processes Analysis (Time Series Analysis)" by Prof. Jean-Yves Dauxois (INSA, France) and Prof. Vincent Lefieux (RTE-DIT, France) July 14-22, 2016.
- Mini-course "LSAM 2016: Interfaces and hysteresis in solid phase transformations" by Prof. Sir John Ball (University of Oxford, UK), August 23&25, 2016.
- Mini-course "The Interpretation of Silence" by Dr. Trinh Huu Tue (University of Wisconsin - Milwaukee, USA), August 29-30, 2016.
- Summer School on Representation theory of finite and p-adic groups, August 29-September 1, 2016.
- Mini-course "Numerical expressions in natural language" by Dr. Andrea Haida (Humboldt University of Berlin, Germany), August 31, 2016.
- Winter School on Gamma-convergence and homogenization in continuum mechanics, October 31 - November 4, 2016.
- Mini-course on Dynamical Systems by Prof. Nguyen Tien Dung (Université Paul Sabatier, France), November 7, 9 & 11, 2016.
- Mini-course "Uncertainty Quantification and Approximation Theory for Parameterized PDEs" by Prof. Clayton G. Webster (University of Tennessee, USA), Dr. Tran Anh Hoang, and Dr. Guannan Zhang (Oak Ridge National Lab, One Bethel Valley Road, USA), November 14-17, 2016.



The Participants of Workshop on Stochastic processes - numerical methods and related topics

- IACR-SEAMS School "Cryptography: Foundations and New Directions", November 27-December 4, 2016.
- Public lecture "Modern Cryptography" by Prof. Adi Shamir (Weizmann Institute, Israel), December 4, 2016.
- Public lecture "History of the last Fermat theorem" by Prof. Ngo Bao Chau (University of Chicago, USA & VIASM), August 21, 2016.
- Public lecture "Lottery" by Prof. Vu Ha Van (Yale University, USA), August 21, 2016.
- Public lecture "The logical basis of non-literal meaning" by Dr. Trinh Huu Tue (Wisconsin - Milwaukee University, USA), August 21, 2016.

### WHAT RESEARCHERS SAY?

"I have been working at the VIASM as a research professor for the period from January to September 2016 and as the head of of the research group "High-dimensional Approximation" for the period from October 2016 to January 2017. There is excellent research environment at the VIASM. Here I met my colleagues from Vietnam and abroad and discussed with them the things of common interest in mathematics, organized a mini-course delivered by well-known international specialists. The stay here of these peoples were supported by VIASM. The excellent work of the board of directors and the administrative staff helped my research work very much. I would like to express my special thanks to them. My previous and present stays at VIASM are very useful to me. During these periods I finished some papers which have been published in good international journals." - Prof. Dinh Dzong.



Prof. Dinh Dzong  
(Information Technology Institute – VNU Hanoi)



FOR EXCELLENT RESEARCH IN VIETNAM

### Vietnam Institute for Advanced Study in Mathematics (VIASM)

#### Founded in 2011

Address:  
7th fl., Ta Quang Buu Library, in HUST campus  
1 Dai Co Viet str., Hanoi, Vietnam.  
Tel: (+84)-4-36231542  
Fax: (+84)-4-36231543  
Website: <http://www.viasm.edu.vn>

### Board of Directors

Scientific Director: Prof. Ngo Bao Chau  
Managing Director: Prof. Nguyen Huu Du  
Deputy Director: Dr. Nguyen Thi Le Huong

### FOR RESEARCH FELLOW APPLICANTS

For more information, please visit:  
<http://viasm.edu.vn/news-and-events/information-for-applicants>



Organizing Committee and participants of the ASIACRYPT 2016

For more information, please visit:  
<http://www.asiacrypt2016.org/>

### ASIACRYPT 2016

ASIACRYPT 2016 was held successfully from December 4 to December 8, 2016 with the participation of 253 scientists from nearly 40 countries around the world. ASIACRYPT is one of three main and largest academic conferences of International Association for Cryptologic Research (IACR) in cryptology (the other two are EUROCRYPT in Europe and CRYPTO in the USA).

ASIACRYPT 2016 attracted many leading experts in the field such as Adi Shamir (winner of Turing Award which often referred to as the "Nobel Prize of Computing"); the pioneers for the development of cryptology in many countries such as Jacques Stern (France), Tatsuaki Okamoto (Japan), Serge Vaudenay (Switzerland); or scientists playing important roles in the computing community as Christian Cachin (President of IACR)...

Furthermore, the Conference also received the attention and sponsorship from many R&D companies and from government such as IACR, Xlim. Viettel, BIDV, ECPay, Cisco, Intel, Microsoft, Google, FPT, EHN and PVg.

### IACR-SEAMS School "Cryptography: Foundations and New Directions"

The IACR-SEAMS School "Cryptography: Foundations and New Directions" was the first joint school between IACR and The South



East Asia Mathematical Society (SEAMS) and organized by Vietnam Institute for Advanced Study in Mathematics (VIASM) and University of Science – Vietnam National University Hanoi (VNU-HUS) from November 27 to December 4, just before ASIACRYPT 2016.

The School consisted of a series of lectures from basic to advanced, from theoretical to practical, taught by leading experts in the field. The school was ranked number one among all proposals to IACR School this year and obtained support from CIMPA (the International Center of Pure and Applied Mathematics), SEAMS, IMU (the International Mathematical Union), VIASM and VNU-HUS.

The School attracted 251 applicants from all over the world. After two rounds of selection, 71 applicants were accepted in which 33 participants were fully supported.

The School both created a professional academical environment and introduced new research directions, which were highly practical and potential for Vietnam in near future.

### Public Lecture of Adi Sharmir

A public lecture on modern cryptography by Adi Shamir took place on December 4, 2016 just after the IACR-SEAMS School. Adi Shamir is one of the founders and contributors for the development of modern cryptography and obtained many prizes, specially the Turing Award - the highest prize in Computer Science.



Prof. Adi Shamir, Turing Prize, in the Public Lecture of Modern Cryptology



WHAT RESEARCHERS SAY?

"The working time at VIASM was very useful and meaningful for me and for our working team. We have all abilities to concentrate to our research, to organize weekly seminar, reading group, and workshop, in that way we can discuss and work continuously together and with our guests. Moreover, we can participate actively to some important events at VIASM, such as the IACR-SEAMS School "Cryptography: Foundations and New Directions" and the conference ASIACRYPT 2016. VIASM give us a perfect environment to contact and exchange with other researchers from other working groups which promise some collaboration in the future." – Assoc. Prof. Phan Thi Ha Duong.



Assoc. Prof. Phan Thi Ha Duong  
(Institute of Mathematics - VAST)

FAST FACTS

52 and 28

52 research fellows and visiting researchers came to work at VIASM from July to December 2016. Among them, there were 28 foreigners or Vietnamese people from abroad.

VIASM Annual Meeting 2016

VIASM Annual Meeting 2016 took place on Saturday August 27, 2016 at VIASM. This annual event of VIASM is following Bourbaki seminars and this is the fifth in the series (since 2012).

For the series, VIASM often invites highly reputed mathematicians to deliver lectures on central topics of contemporary mathematics. The lecturers provide the audience with most interested problems in their research fields or others, main ideas and main results.

The lectures are published in a special issue of Acta Mathematica Vietnamica.

This year meeting took place in one day with four lectures. Two lectures in the morning given by professors from University of Oxford, UK (Prof. Sir John Ball and Prof.

Luc Nguyen) focused on nonlinear partial differential equations and applications in material science. The other two lectures in the afternoon by Prof. Jochen Heinloth (Universität Duisburg-Essen, Germany) and Prof. Ngo Bao Chau (University of Chicago, USA and VIASM) focused on Langlands program.

The meeting attracted more than 60 participants.

For further information, please visit: <http://viasm.edu.vn/hdkh/am2016/>

Updated activities of the National Program for the Development of Mathematics (NPDM)

As annual activities, training schools for high school math teachers and high school gifted math students were held in the summer of 2016. In July and August 2016, two training schools for math teachers from high schools for gifted students were held in the North and in the South of Vietnam with the participation of 93 teachers from high schools for gifted students over the country.

Besides that, 3 training schools for high school gifted students specializing in math were also successfully held in Hanoi, Quang Nam, Binh Phuoc with the participation of 131, 83 and 127 high school students respectively. A summer school for college students also held in Quy Nhon in which 92 students were trained by 4 lecturers.

In the late November 2016, the Program decided to grant scholarships (each worth 8.050 million VND) to 297 students from 71 high school for gifted students and 185 math students from 12 universities in all over the country (for the first semester of the school-year 2016-2017).

Moreover, the Program continued granting the Mathematical Research Awards 2016. There were 162 papers applied for the Award and 85 published papers have been granted (each award is worth of 30.250 million VND).



Math Open Day 2016 "Symphony No.  $\pi$ "

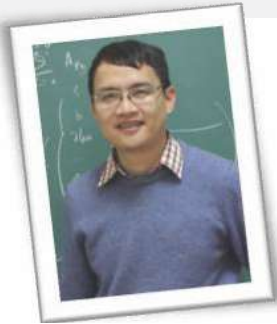
In addition, Math Open Day 2016 "Symphony No.  $\pi$ " was held successfully at 6th & 7th floor Ta Quang Buu Library, HUST

on 21 August, 2016 with the participant of more than 1500 students and pupils from Hanoi and its adjacent. This was one activity of Math Open Day Series, which tended to organize annually by NPDM. There were 7 partner organizations which jointly made its program, 6 bookstores and 1 lunch shop. More than 150 people were assigned as instructors, volunteers and staffs of partner organizations.

For more information, please visit: <http://viasm.edu.vn/npdm/>

WHAT RESEARCHERS SAY?

"I am very delighted to be worked at VIASM. Here, researchers are provided a professional working environment and hospitality. During the time at VIASM, I have a lot of good chances to meet and discuss with many great researchers and famous professors from different countries on the world, and from different places in Vietnam. Moreover, it is easy to organize seminars, working groups, courses and workshops with enthusiastic and proactive staffs of VIASM. It is wonderful to be here..." - Dr. Do Duc Thuan.



Dr. Do Duc Thuan  
(Hanoi University of Science and Technology)

Research groups

From July 2016 until December 2016, there have been 8 research groups working at VIASM:

- Group on *Error Bounds for Generalized Equations and Variational Systems with Applications in Optimization* consisted of 2 members and 1 visitor: Prof. Pham Ky Anh (Head), Prof. Le Dung Muu, Prof. Stephan Dempe.
- Group on *Error Bounds for Generalized Equations and Variational Systems with Applications in Optimization* consisted of 2 members and 2 visitors: Prof. Huynh Van Ngai (Head), Assoc. Prof. Phan Nhat Tinh, Prof. Alexander Ioffe, Prof. Jean-Paul Penot.
- Group on *Some problems on Geometry and Singularity of affine algebraic curves, surfaces and polynomials* consisted of 4 members and 1 visitor: Prof. Dr. Nguyen Van Chau (Head), Dr. Pho Duc Tai, Dr. Nguyen Tat Thang, Dr. Le Quy Thuong, Prof. Masaharu Ishikawa.



Research group of Assoc. Prof. Ha Huy Tai  
(Tulane University)

- Group on *High and infinite-dimensional approximation and applications* consisted of 1 member and 4 visitors: Prof. Dinh Dzung (Head), Prof. Vladimir Temlyakov, Prof. Clayton G. Webster, Dr. Tran Anh Hoang, Dr. Guannan Zhang.
- Group on *Random Functions* consisted of 5 members: Prof. Vu Ha Van (Head), Dr. Do Quang Yen, Dr. Tran Vinh Linh, Dr. Nguyen Huu Hoi, PhD Student, Nguyen Hoang Oanh.
- Group on *FBSDEs and Probabilistic Methods for Stochastic Control Problems*, consisted of 1 member and 1 visitor: Prof. Stephan Ankirchner (Head), Prof. Nabil Kazi-Tani.
- Group on *Some selected problems in the theory of partial differential equations* consisted of 3 members: Prof. Nguyen Minh Tri (Head), MSc. Dao Quang Khai, MSc. Duong Trong Luyen.
- Group on *Homogenization of two-dimensional very rough interfaces* consisted of 3 members and 3 visitors: Prof. Pham Chi Vinh (Head), Dr. Tran Thanh Tuan, Dr. Do Xuan Tung, Prof. Chiara Zanini, Prof. Marita Thomas, Prof. Marcos Aurelio Capistran Ocampo.



Research group of Assoc. Prof. Huynh Van Ngai  
(Quy Nhon University)

Visitors

- Prof. Sir John Ball, University of Oxford, UK.
- Prof. Robert Cori, Université Bordeaux, France.
- Prof. Rafael Correa, Universidad de Chile, Chile.
- Prof. Jean-Yves Dauxois, INSA, France.
- Prof. Stephan Dempe, TU Bergakademie Freiberg, Fakultät für Mathematik und Informatik, Germany.
- Prof. Nguyen Tien Dung, Université Paul Sabatier, France.
- Dr. Jochen Heinloth, Universität Duisburg-Essen, Germany.
- Dr. Tran Anh Hoang, Oak Ridge National Lab, One Bethel Valley Road, USA.

LSAM 2016: Interfaces and hysteresis in solid phase transformations (August 23 and August 25, 2016)

The first lecture of VIASM Lecture Series in Applied Mathematics (LSAM) - "Interfaces and hysteresis in solid phase transformations" - given by Prof. Sir John Ball (Oxford University, UK) was held at VIASM on August 23 and 25, 2016. The Lecture Series aims at training and promoting the applications of mathematics in other sciences as well as in various issues in society.

Sir John Ball's lectures at VIASM attracted 120 participants who were researchers, lecturers and students from various institutes and colleges in Vietnam.



Prof. Sir John Ball at the LSAM 2016  
(Interfaces and hysteresis in solid phase transformations.)

The second lecture of VIASM Lecture Series in Applied Mathematics will be given by Prof. Jean-Michel Coron (Paris-Sud 11 University, France) in August 2017.

Cooperation

In 2016, the Institute has promoted its cooperation with partners in both international academic and financial areas and achieved the following cooperation agreements:

- Strategic agreement with Viet Capital Bank in sponsoring VIASM Lecture Series in Applied Mathematics (from 2016).
- Agreement for academic exchange and cooperation with the Faculty of Science and Engineering, Åbo Akademi University (Finland).
- Memorandum of Understanding with the Faculty of Science and the Graduate School of Humanities and Sciences, Nara Women's University (Japan) in exchange of students, teaching staff, researchers and other staff; joint educational and training programs; joint research, academic activities, etc.
- General agreement for scientific and technical cooperation with the Institute