

# Report on

## SEAMS SCHOOL “ALGEBRAIC CURVES”

VIASM, July 8, 2013 – July 19, 2013

[http://viasm.edu.vn/activities/school\\_ac2013/?lang=en](http://viasm.edu.vn/activities/school_ac2013/?lang=en)

### I. Scientific report

The SEAMS school “Algebraic Curves” provides basic materials on Commutative Algebra and on algebraic curves. It was organized by Vietnam Institute for Advanced Study in Mathematics (VIASM) and Southeast Asian Mathematical Society (SEAMS). It was held at VIASM, from July 8 to 19, 2013.

The organizers included: Ngo Bao Chau (Chicago and VIASM, Director), Doan Trung Cuong (Institute of Mathematics Hanoi), Le Tuan Hoa (VIASM) and Nguyen Chu Gia Vuong (Institute of Mathematics Hanoi).

There were seven lecturers. They are Prof. Ngo Bao Chau (Chicago University – USA and VIASM), Le Hung Viet Bao (Harvard University - USA), Prof. Nguyen Tu Cuong (Institute of Mathematics Hanoi), Dr. Doan Trung Cuong (Institute of Mathematics Hanoi), Prof. Phung Ho Hai (Institute of Mathematics Hanoi), and Prof. E. Lapid (The Weizmann Institute of Science, Israel).

There were 30 students selected for the school.

The school consisted of 10 days, each day 2 lectures. More concretely the following mini-courses were given

1. Commutative algebra (Prof. Nguyen Tu Cuong): 4 lectures
2. Basic algebraic geometry (Dr. Doan Trung Cuong): 4 lectures
3. Vector bundles over algebraic curves (Prof. Ngo Bao Chau): 4 lectures
4. Flat connections (Prof. Phung Ho Hai): 3 lectures
5. Modularity theorem (Le Hung Viet Bao): 3 lectures
6. Introduction to the trace formula (Prof. Erez Lapid): 2 lectures.

A detailed schedule and contents of lectures were put on the website of the school:

[http://viasm.edu.vn/activities/school\\_ac2013/?lang=en](http://viasm.edu.vn/activities/school_ac2013/?lang=en) (see also Appendix 2)

In the weekend during school, a trip outside Hanoi was organized for all participants.

## II. Administrative report

- The school was planned by VIASM at the end of 2012. After the meeting of SEAMS council meeting on January 19, 2013 in Bangkok, SEAMS Council agreed to be a co-organizing partner of this school and the school become an official SEAMS-school.
- Later on, CIMPA agreed to support this school, and VIASM agreed that the financial support of CIMPA will be only used to support students from South East Asia outside Vietnam.
- The school was announced at the website of VIASM: [http://viasm.edu.vn/activities/school\\_ac2013/?lang=en](http://viasm.edu.vn/activities/school_ac2013/?lang=en) (see Appendix 1)
- The deadline for application was June 15, 2013. There were 38 applications (see Appendix . Among them there were 9 applications from students outside Vietnam and 5 Vietnamese students who are studying at the moment in abroad. Most of them are master students. Some of them are PhD. Students, and few from Vietnam are still undergraduate students. After the examination of applications, 30 students were selected (among them 5 from South East Asia, and 5 Vietnamese abroad), see List 1 below. The grants were announced on June 20, 2013.
- First students came on July 7th, and last students left the institute on July 21st. All students who need accommodation stayed in a mini-hotel ca. 1km from VIASM.

### *List 1. List of Students*

No	Fullname	Name of Department and University
1	Ika Nur Afianti	University of Ahmad Dahlan, Indonesia
2	Tạ Thế Anh	Eotvos Lorand University, Faculty of Science, Institute of Mathematics, Hungary
3	Trần Thị Hoàng Anh	University of Science, Thai Nguyen
4	Hoàng Phương Anh	Hanoi National University of Education
5	Eric Anthony C. Arances	Institute of Mathematics, University of the Philippines, (Diliman Campus)
6	Tô Tất Đạt	Hanoi University of Science and Technology
7	Hoàng Thế Dũng	Institute of Mathematic, VAST
8	Nguyễn Thị Thu Hằng	Hai Phong University
9	Bùi Thị Hiền	Hanoi National University of Education
10	Ngô Trung Hiếu	University of Michigan
11	Ngô Quốc Hoàn	Hai Phong University

12	Nguyễn Thế Hoàng	Hanoi National University of Education
13	Vũ Thị Huệ	Hanoi National University of Education
14	Nguyễn Anh Hùng	Faculty of Mechanics and Mathematics, Lomonosov Moscow State University
15	Irwansyah	Mathematic Department/Bandung Institute of Technology, Indonesia
16	Tống Thị Loan	Hanoi National University of Education
17	Phạm Ngọc Hoàng Minh	VNU- University of Science
18	Nguyễn Thị Thúy Nga	Hanoi National University of Education
19	David Tuấn Nguyễn	Departement of Mathematic, California State Polytechnic University, Pomona
20	Vũ Thị Minh Phương	Hanoi National University of Education
21	Rudi Adha Prihandoko	Department of Mathematics, Institute Teknologi Bandung, Indonesia
22	Hồ Phú Quốc	University of Chicago
23	Jason Smith	Living in Hanoi, no working institution
24	Trần Tiến Tâm	Hanoi University of Science and Technology
25	Nguyễn Thị Thanh	Hanoi National University of Education
26	Đặng Thị Thơm	Institute of Mathematic, VAST
27	Vũ Xuân Trường	Institute of Mathematic, VAST
28	Nguyễn Thọ Tùng	VNU- University of Science
29	Trần Thị Xuân	Institute of Mathematic, VAST
30	M. Taufik. B. M. Yusof	School of Mathematical Science, UKM, Malaysia

### 3. Financial report

Preliminary, the budget were planned only for Vietnamese students, because this was considered to be an activity of Prof. Ngo Bao Chau during his stay at VIASM summer 2013. However, after the agreement with SEAMS and CIMPA, the school was extended for students outside Vietnam. All budget from CIMPA should only cover expenses of foreign students.

As the result of selection, 30 students were admitted to the school. However, only 5 foreign students and 11 Vietnamese needed financial supports. All of these 16 students stayed in the same mini hotel which is located ca 1km from VIASM (the rate for foreigners there are higher than for Vietnamese!).

All foreign students came on July 7th. Four of them left on July 20 and the last one left on July 21st (but he didn't stay in the hotel on the last night).

Totally VIASM spent 257 370 000 VND (two hundred fifty seven millions and three hundred seventy thousands Vietnamese dong). This included 103 020 000 VND (equivalent 5 151 USD) paid for foreigners.

*We are now asking the CIMPA to pay back this amount (5 151 USD – five thousands one hundred fifty one dollars).*

Below is the detail of expenses

**List 2. Financial report**

No	Content	Paid by	
		VIASM (in VNĐ)	CIMPA (in USD)
<b>I</b>	<b>Expense for lecturers</b>	<b>40.000.000</b>	
1	Honorarium for 6 lecturers	40.000.000	
<b>II</b>	<b>Expense for students</b>	<b>77.890.000</b>	<b>5.151</b>
1	Travel expenses for 7 Vietnamese students	10.050.000	
2	Travel expenses for 5 International students		2.651
3	Meal expenses for 25 Vietnamese students	25.000.000	
4	Meal expense for 5 International students		1.000
5	Hotel expenses for 11 Vietnamese students (11 nights)	36.300.000	
6	Hotel expenses for 5 International students (13 nights)		1.500
7	Drinks for 30 students	15.000.000	
<b>III</b>	<b>Other expenses</b>	<b>18.000.000</b>	
1	Stationary, printing supply expenses	8.000.000	
2	Administrative expenses	10.000.000	
	<b>Total (I+II+III)</b>	<b>154.350.000 VNĐ</b>	<b>5.151 USD</b>

In the file 13SEAMS\_School\_docu\_Full and 13SEAMS\_Payment\_Foreigners we scan all documents concerning expenses for 5 foreign students.

The original are kept at VIASM and after CIMPA will approve this report, we will send it to CIMPA by post.

#### **4. Conclusion**

The SEAMS-school was a great success. Students had opportunity to learn an introduction to a very advanced subject in Algebraic Geometry as well as learn about some modern trends in this area. Students also had opportunity to meet some distinguish professors who taught at the school and some professors who came to two workshops organized at VIASM right after the school (from 20 to 27 July). The list included Professor Ngo Bao Chau from Chicago and VIASM, Prof. E. Lapid from Israel and Prof. J. Coates from UK. Some of Vietnamese students stayed further in order to participate in the above mentioned workshops.

Students in the region also had opportunity to meet each other, that could lead to a collaboration between them in the future.

On this occasion, the organizers and VIASM would like to thank SEAMS and CIMPA for supporting the idea to organize this international school for students, and especial thank to CIMPA for generous financial support, without it we cannot invite foreign students to come.

Hanoi, August 30th, 2013

Le Tuan Hoa

Managing Director of VIASM

## ***Appendix 1. Announcement***

This school provides basic materials on Commutative Algebra and on algebraic curves.

Dates: July 8, 2013 – July 19, 2013

### ***Organizing Institutions:***

- Vietnam Institute for Advanced Study in Mathematics (VIASM)
- Southeast Asian Mathematical Society (SEAMS)

### ***Main Sponsors:***

- VIASM
- Centre International de Mathématiques Pures et Appliquées (CIMPA)

### ***Organizers:***

Ngo Bao Chau (Chicago and VIASM, Director), Doan Trung Cuong (Institute of Mathematics Hanoi), Le Tuan Hoa (VIASM) and Nguyen Chu Gia Vuong (Institute of Mathematics Hanoi).

Audience: Undergraduate students and graduate students.

### ***Main Lecturers:***

Prof. Ngo Bao Chau, Dr. Le Hung Viet Bao, Prof. Nguyen Tu Cuong, Dr. Doan Trung Cuong, Prof. Phung Ho Hai, and Prof. E. Lapid.

***Registration:*** Before June 15th 2013.

Undergraduate students and graduate students can apply to participate in this school by sending application (form below) via email at [vseams@viasm.edu.vn](mailto:vseams@viasm.edu.vn)

- Application form for international students: VSEAMS2013-Application-EN
- Application form for Vietnamese students: VSEAMS2013-Application-VN

***Selection announcement of participants and grants will be made on June 20th 2013.***

Language: English.

## *Appendix 2. Program*

### SEAMS School “Algebraic curves”

VIASM, July 8-19, 2013

#### LECTURES

1. [Commutative algebra](#) (Prof. Nguyen Tu Cuong)
2. [Basic algebraic geometry](#) (Dr. Doan Trung Cuong)
- [1] [Lectures Note](#)
3. Vector bundles over algebraic curves (Prof. Ngo Bao Chau)
4. Flat connections (Prof. Phung Ho Hai)
  - 4.1. System of linear differential equations on a Riemann surface
  - 4.2. Differential forms, derivations, connections
  - 4.3. Regular singularity, Riemann-Hilbert correspondence

The audience is assumed to be familiar with the topological fundamental group, covering spaces.

References for this topics:

- [1] [O. Forster, Lectures on Riemann surface](#)
- [2] An online lecture on the fundamental group  
<http://www.youtube.com/watch?v=J7-sI4A6D0>
5. [Modularity theorem](#) (Dr. Le Hung Viet Bao)
6. Introduction to the trace formula (Prof. Erez Lapid)

#### SCHEDULE

*Week 1 (8-12/7/2013)*

	Monday	Tuesday	Wednesday	Thursday	Friday
9h-9h50 10h10-11h	NTC1	NTC2	LHVB1	NTC3	NTC4
14h-14h50 15h10-16h	DTC1	DTC2	LHVB2	DTC3	DTC4

***Week 2 (15-19/7/2013)***

	Monday	Tuesday	Wednesday	Thursday	Friday
9h-9h50 10h10-11h	NBC1	NBC2	PHH2	NBC3	NBC4
14h-14h50 15h10-16h	PHH1	LHVB3	Lapid	PHH3	Lapid



**Appendix 3. Content of the file 13 SEAMS\_School\_docu\_Full  
(Concerning 5 foreign students)**

Name	Page
<b>I. IKA NUR AFIATI</b>	
1. Application	1
2. Recommendation letter	2
3. Study Transcript	3
4. Boarding pass	7
5. E-ticket	9
6. Passport	10
<b>II. ERIC ANTHONY C. ARANCES</b>	
1. Application	12
2. Recommendation letter	13
3. Boarding pass	15
4. E-ticket	17
5. Passport	19
<b>III. IRWANSYAH</b>	
1. Application	21
2. Recommendation letter	22
3. Study Transcript	23
4. Boarding pass	24
5. E-ticket	26
6. Passport	29
<b>IV. RUDI ADHA PRIHANDOKO</b>	
1. Application	31
2. Recommendation letter	32
3. Study Transcript	33
4. Boarding pass	34
5. E-ticket	36
6. Passport	39
<b>V. M.TAUFIK. B. M. YUSOF</b>	
1. Application	41
2. Recommendation letter	42
3. Study Transcript	43
4. Boarding pass	44
5. E-ticket	47
6. Passport	49
<b>VI. LIST OF HOTEL ROOM RATE</b>	
	51

### **Appendix 4. LIST OF APPLICATIONS**

<b>No</b>	<b>Fullname</b>	<b>Name of Department and University</b>	<b>Accepted/ Not accepted</b>	<b>Duration of stay</b>	<b>Need an accommodation</b>	<b>Need a travelling support</b>	<b>Notes</b>
1	Ika Nur Afiati	University of Ahmad Dahlan, Indonesia	Accepted	7/7-20/7	Yes	Yes	
2	Tạ Thế Anh	Eotvos Lorand University, Faculty of Science, Institute of Mathematics, Hungary	Accepted	7/7-20/7	No	No	
3	Trần Thị Hoàng Anh	University of Science, Thai Nguyen	Accepted	7/7-20/7	Yes	No	
4	Hoàng Phương Anh	Hanoi National University of Education	Accepted	7/7-20/7	No	No	
5	Eric Anthony C. Arances	Institute of Mathematics, University of the Philippines, (Diliman Campus)	Accepted	7/7-20/7	Yes	Yes	
6	Tô Tất Đạt	Hanoi University of Science and Technology	Accepted	8/7-30/8	No	No	
7	Hoàng Thế Dũng	Institute of Mathematic, VAST	Accepted	7/7-20/15	No	No	
8	Trần Đức Dũng	University of Science, Thai Nguyen	Not accepted	7/7-20/20	No	No	
9	Nguyễn Thị Thu Hằng	Hai Phong University	Accepted	7/7-20/8	Yes	No	
10	Bùi Thị Hiền	Hanoi National University of Education	Accepted	8/7-30/8	Yes	Yes	
11	Ngô Trung Hiếu	University of Michigan	Accepted	7/7-20/13	No	No	

12	Ngô Quốc Hoàn	Hai Phong University	Accepted	7/7-20/12	Yes	No	
13	Nguyễn Thế Hoàng	Hanoi National University of Education	Accepted	7/7-20/19	No	No	
14	Vũ Thị Huệ	Hanoi National University of Education	Accepted	8/7-30/8	Yes	Yes	
15	Nguyễn Anh Hùng	Faculty of Mechanics and Mathematics, Lomonosov Moscow State University	Accepted	7/7-30/8	No	No	
16	Đặng Thanh Hưng	Phuong Dong University	Not accepted	7/7-20/7	No	No	
17	Irwansyah	Mathematic Department/Bandung Institute of Technology, Indonesia	Accepted	7/7-20/7	Yes	Yes	
18	Nguyễn Duy Khánh	VNU- University of Science	Not accepted	7/7-20/11	No	No	
19	Chakrit Kongmee	Department of Mathematics, King Mongkut's University of Technology North Bangkok	Not accepted	7/7-20/7	Yes	Yes	
20	Tổng Thị Loan	Hanoi National University of Education	Accepted	8/7-30/8	No	No	
21	Dian Ayu Merdekawati	Departement of Mathematic and Natual Science Tadulako University	Not accepted	7/7-20/7	Yes	Yes	
22	Phạm Ngọc Hoàng Minh	VNU- University of Science HCMcity	Accepted	8/7-30/8	Yes	Yes	
23	Nguyễn Thị Thúy Nga	Hanoi National University of Education	Accepted	8/7-30/8	No	No	
24	David Tuấn Nguyễn	Departement of Mathematic, California State Polytechnic University, Pomona	Accepted	7/7-20/7	No	No	

25	Vũ Thị Minh Phương	Hanoi National University of Education	Accepted	7/7-20/18	No	No	
26	Por Seng Pin	School of Mathematical Science Sains, Malaysia	Not accepted	7/7-20/7	Yes	Yes	
27	Rudi Adha Prihandoko	Department of Mathematics, Institute Teknologi Bandung, Indonesia	Accepted	7/7-20/7	Yes	Yes	
28	Hồ Phú Quốc	University of Chicago	Accepted	7/7-20/10	No	No	
29	Jason Smith	No working institution yet, lived in Hanoi	Accepted	7/7-20/16	No	No	
30	Trần Tiến Tâm	Hanoi University of Science and Technology	Accepted	8/7-30/8	No	No	
31	Phạm Thanh Tâm	Institute of Mathematic, VAST	Not accepted	8/7-30/8	No	No	
32	Nguyễn Thị Thanh	Hanoi National University of Education	Accepted	7/7-20/14	Yes	No	
33	Chutikarn Theosarn	Department of Mathematics, Mahidol University	Not accepted	7/7-20/7	Yes	Yes	
34	Đặng Thị Thơm	Institute of Mathematic, VAST	Accepted	8/7-30/9	Yes	Yes	
35	Vũ Xuân Trường	Institute of Mathematic, VAST	Accepted	8/7-30/8	Yes	Yes	
36	Nguyễn Thọ Tùng	VNU- University of Science	Accepted	8/7-30/8	No	No	
37	Trần Thị Xuân	Institute of Mathematic, VAST	Accepted	8/7-30/10	Yes	Yes	
38	M. Taufik. B. M. Yusof	School of Mathematical Science, UKM, Malaysia	Accepted	7/7-20/7	Yes	Yes	