



SOUTH EAST ASIAN MATHEMATICAL SOCIETY

FINAL REPORT

Some Aspects of Representation Theory

**UNIVERSITAS GADJAH MADA
YOGYAKARTA, INDONESIA
09-17 NOVEMBER 2015**

ORGANIZED BY

**ALGEBRA RESEARCH GROUP
UNIVERSITAS GADJAH MADA
AND
INDONESIAN ALGEBRAIC SOCIETY**

with the support of

**MATHEMATICS DEPARTMENT
Faculty of Mathematics and Natural Sciences
UNIVERSITAS GADJAH MADA
and
CIMPA - France**

2015

Some Aspects of Representation Theory

Universitas Gadjah Mada, Yogyakarta, Indonesia

09 – 17 November 2015

I. Summary

We organized a SEAMS School with the topic Some Aspects of Representation Theory which take a place in Mathematics Department, Universitas Gadjah Mada. We invited 8 speakers from Indonesia, The Netherlands, France and Singapore. Twelve participants come from several countries, i.e. Nepal, Malaysia, The Phillipines, Cambodia, Japan, Pakistan, Thailand and Vietnam. Total amount of participants was 55. Participants from Indonesia come from several parts of Indonesia.

The lectures was begun with an introduction to the representation theory in order to give some elementary ideas of representation theory. Moreover, some special topics has been delivered : representation of finite groups, geometric methods in representation theory, representation of Leavitt path algebras, and representation of Lie groups.

II. Scientific Objectives and Rationale for the School

Objective of the school are :

1. to introduce the students to the some fundamental theories and research in representation theory and some aspects of it;
2. to provide young researchers with sufficient knowledge and background to start their research in representation theory;
3. to facilitate contacts between mathematicians working in these areas and the students.

III. Organizers and Lecturers

The School was organized by lecturers and students of Algebra Research Group, Mathematics Department, UGM, as follow:

1. Prof. Dr. Sri Wahyuni (Chair)
2. Dr. Indah Emilia Wijayanti
3. Sutopo, S.Si., M.Si
4. Uha Isnaini, S.Si., M.Sc
5. Na'imah Hijriati
6. Fitriani
7. Ahmad Faisol
8. Ari Dwi Hartanto

The organizing committee was also supported by technical support team.

The speakers :

1. Dr. Intan Muchtadi, ITB, ntan@math.itb.ac.id
2. Prof. Dr. Sri Wahyuni, UGM, swahyuni@ugm.ac.id
3. Dr. Indah E. Wijayanti, UGM, ind_wijayanti@ugm.ac.id
4. Dr. Dellavitha Nasution, ITB, dellavitha@math.itb.ac.id
5. Dr. Khurul Wardati, UIN Sunan Kalijaga, ag_khurul@yahoo.co.id
6. Prof. Dr. Michel Jambu, University of Nice, jambu@unice.fr
7. Prof. Dr. Bas Edixhoven, Leiden University, edix@math.leidenuniv.nl
8. Prof. Dr. Zhu Cheng Bo, NUS, matzhucb@nus.edu.sg

IV. The Participants

Total number: 55 participants

Total Participants from aborad: 12 participants

Total Participants from aborad supported by CIMPA : 2 participants

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V. School Programs

DATE	TIME	AGENDA	SPEAKER
MONDAY, NOVEMBER 9 TH	07.00 – 08.00	REGISTRATION	
	08.00 – 08.15	OPENING SESSION	
	08.15 – 10.00	SECTION 1 : INTRODUCTION TO REPRESENTATION THEORY	DR. INDAH EMILIA WIJAYANTI
	10.00 – 10.30	BREAK	
	10.30 – 12.00	SECTION 2 : INTRODUCTION TO REPRESENTATION THEORY	PROF. DR. SRI WAHYUNI
	12.00 – 13.00	LUNCH	
	13.00 – 14.45	SECTION 3 : REPRESENTATION THEORY OF FINITE GROUP	PROF. BAS EDIXHOVEN
	14.45 – 15.15	BREAK	
	15.15 – 17.15	GROUP DISCUSSION	
TUESDAY, NOVEMBER 10 TH	08.15 – 10.00	SECTION 4 : INTRODUCTION TO GEOMETRIC METHODS IN REPRESENTATION THEORY	PROF. MICHEL JAMBU
	10.00 – 10.30	BREAK	
	10.30 – 12.00	SECTION 5 : INTRODUCTION TO GEOMETRIC METHODS IN REPRESENTATION THEORY	PROF. MICHEL JAMBU
	12.00 – 13.00	LUNCH	

DATE	TIME	AGENDA	SPEAKER
	13.00 – 14.45	SECTION 6 : REPRESENTATION THEORY OF FINITE GROUP	DR. INTAN MUCHTADI ALAMSYAH
	14.45 – 15.15	BREAK	
	15.15 – 17.15	GROUP DISCUSSION	
WEDNESDAY, NOVEMBER 11 TH	08.15 – 10.00	SECTION 7 : REPRESENTATION THEORY OF FINITE GROUP	DR. INTAN MUCHTADI ALAMSYAH
	10.00 – 10.30	BREAK	
	10.30 – 12.00	SECTION 8 : REPRESENTATION OF LEAVITT PATH ALGEBRAS	DR. INTAN MUCHTADI ALAMSYAH
	12.00 – 13.00	LUNCH	
	13.00 – 14.45	SECTION 9 : INTRODUCTION TO GEOMETRIC METHODS IN REPRESENTATION THEORY	DR. DELLAVITA NASUTION
THURSDAY, NOVEMBER 12 TH	08.15 – 10.00	SECTION 10 : INTRODUCTION TO GEOMETRIC METHODS IN REPRESENTATION THEORY	DR. DELLAVITA NASUTION
	10.00 – 10.30	BREAK	
	10.30 – 12.00	SECTION 11 : REPRESENTATION THEORY OF FINITE GROUP	PROF. BAS EDIXHOVEN
	12.00 – 13.00	LUNCH	
	13.00 – 14.45	SECTION 12 : REPRESENTATION OF LEAVITT PATH ALGEBRAS	DR. KHURUL WARDATI
	14.45 – 15.15	BREAK	
	15.15 – 17.15	GROUP DISCUSSION	
FRIDAY, NOVEMBER 13 TH	08.15 – 09.30	SECTION 13 : INTRODUCTION TO GEOMETRIC METHODS IN REPRESENTATION THEORY	PROF. MICHEL JAMBU
	09.30 – 10.00	BREAK	
	10.00 – 11.30	SECTION 14 : REPRESENTATION THEORY OF FINITE GROUP	PROF. BAS EDIXHOVEN
	11.30 – 13.00	LUNCH	
	13.00 – 14.15	SECTION 15 : REPRESENTATION THEORY OF FINITE	PROF. BAS EDIXHOVEN

DATE	TIME	AGENDA	SPEAKER
		GROUP	
	14.15 – 14.45	BREAK	
	14.45 – 16.45	GROUP DISCUSSION	
<i>EXCURSION</i>			
SATURDAY, NOVEMBER 14 TH			
MONDAY, NOVEMBER 16 TH	08.15 – 10.00	SECTION 16 : INTRODUCTION TO GEOMETRIC METHODS IN REPRESENTATION THEORY	PROF. MICHEL JAMBU
	10.00 – 10.30	BREAK	
	10.30 – 12.00	SECTION 17 : REPRESENTATION THEORY OF LIE GROUP	PROF. DR. ZHU CHENGBO
	12.00 – 13.00	LUNCH	
	13.00 – 14.45	SECTION 18 : REPRESENTATION THEORY OF LIE GROUP	PROF. DR. ZHU CHENGBO
	14.45 – 15.15	BREAK	
	15.15 – 17.15	GROUP DISCUSSION	
TUESDAY, NOVEMBER 17 TH	08.15 – 10.00	SECTION 19 : REPRESENTATION THEORY OF LIE GROUP	PROF. DR. ZHU CHENGBO
	10.00 – 10.30	BREAK	
	10.30 – 12.00	SECTION 20 : REPRESENTATION THEORY OF LIE GROUP	PROF. DR. ZHU CHENGBO
	12.00 – 13.00	LUNCH	
	13.00 – 13.30	CLOSING SESSION	

VI. Conclusion

The school has introduced students to the Representation Theory and has stimulated a good research atmosphere among the algebraists in Indonesia and other countries.

Some possibilities of collaborations and further discussions have been formed, especially between doctoral students and the speakers or between the students who interested to study in topics representation theory.

In the future the school will be continued by a CIMPA School for young researchers or candidates of doctoral program which is planned in the year 2019 or 2018.

VII. Financial Report (enclosed)

Yogyakarta, December 1, 2015

Prof. Dr. Sri Wahyuni (The Chair)

Dr. Indah Emilia Wijayanti (The Co-Chair)

Photos
(displayed on the website <http://seams-school2015.fmipa.ugm.ac.id/gallery/>)











Report on SEAMS school
University Gadjah Mada, Yogyakarta, Indonesia

9-17 November 2015

Michel Jambu

On some Aspects of Representation Theory

The project of this SEAMS school began during ICM 2014 in Seoul, where the Professor Sri Wayuni said to me her wish to organize a school in her university in Yogyakarta and she asked me to help her.

The Prof. Sri Wayuni, Chair of the department of mathematics of the university Gadjah Mada, knows very well CIMPA because she took part of a CIMPA school in 2011 in her department, and she is involved in SEAMS.

This school gathered 55 participants, 12 foreigners and 43 Indonesian. CIMPA supported 10 of the 12 foreigners coming from Malaysia, Cambodia, the Philippines, Pakistan, Nepal and Vietnam; two others were from the university of Nagoya. We have to mention that there exists a MoU between the Faculty of Sciences of Gadjah Mada University and the university of Nagoya, this MoU is specific for mathematics and it is the reason why this two Japanese mathematicians attended this school.

The Indonesian participants were mainly from Yogyakarta and also from ITB Bandung, where some CIMPA schools were already organized.

Eight lecturers, five from Indonesia (ITB Bandung and Gadjah Mada), one from Netherland, one from Singapore and one from France, gave a total of 21 sessions of 1h30 to 1h45.

Four thematic groups were organized. I gave four talks on Hypergeometric Functions and Monodromy Representation.

Every day, the two hours last session was for discussions. The students were very active during these sessions.

The foreign lecturers stayed at UGM hotel, ten minutes walking from the department of mathematics and the foreign participants stayed in some guest houses in the UGM campus.

The lunch and the coffee breaks were offered at the department of mathematics.

Due to the Professor Sri Wayuni and the local organization committee, the relations between the participants and the lecturers were very friendly. Professor Sri Wayuni asked to one representative by country to give a short

talk during the closing ceremony and it was really a very interesting and amazing time.

Finally, the previsional budget was under evaluated due to the higher prices of the flight tickets of the foreign participants. Professor Sri Wayuni required an extra support from CIMPA and the answer given the same day was positive. All the organizers and lecturers were very happy and they express their grateful thanks to CIMPA.