

Commutative Algebra and Related Topics



May 22(Mon.)–June 2(Fri.), 2017

Okinawa Institute of Science and Technology

Graduate University

1919-1 Tancha, Onna-son, Kunigami-gun

Okinawa, Japan 904-0495

<http://www.oist.jp/ja>

This seminar is supported by the following institutions:

MSRI

OIST

JAMS

RIMS

Organizers:

Shihoko Ishii (Tokyo Woman's Christian University)

Kazuhiko Kurano (Meiji University)

Ken-ichi Yoshida (Nihon University)

Local organizer:

Shinobu Hikami (OIST)

Advisor:

Kei-ichi Watanabe (Nihon University)

Time Schedule (1st week)

Location:

Sea Side House	<input type="checkbox"/>	... Seminar Room (1F)
	<input type="checkbox"/>	* ... Chura Hall (3F)
Main Campus	<input type="checkbox"/>	• ... Conference Hall

May 22 (Mon.) /Seaside House

8:00 ~ 9:00	- <i>Breakfast</i> *-
9:00 ~ 9:30	Opening ceremony
9:30 ~ 10:45	Lecture 1 (Claudia Polini, Univ. Notre Dame) "Integral closure, minimal reduction, cores (1)"
11:15 ~ 12:30	Lecture 2 (Ryo Takahashi, Nagoya Univ.) "The category of maximal Cohen-Macaulay modules (1)"
12:30 ~ 14:00	- <i>Lunch</i> *-
14:00 ~ 15:00	Free Time
15:00 ~ 15:30	- <i>Tea Break</i> *-
15:30 ~ 17:45	Exercises

Group A at Seminar Room

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 2 (Takahashi)	Takahashi, Matsui
16:45 ~ 17:45	Exercise for Lecture 1 (Polini)	Polini, Ma

Group B at Chura Hall

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 1 (Polini)	Martinez, support
16:45 ~ 17:45	Exercise for Lecture 2 (Takahashi)	Araya, support

18:00 ~ 19:30 -*Dinner**-



Notice: Any participant and organizer can eat dinner at Chura Hall (18:00–19:30) on May 21

May 23 (Tue.) /Main Campus

8:00 ~ 9:00 -*Breakfast**-

Sea Side House → Main Campus

9:30 ~ 10:45 **Lecture 1** (Claudia Polini, Univ. Notre Dame) at Conference Room
 “Integral closure, minimal reduction, cores (2)”

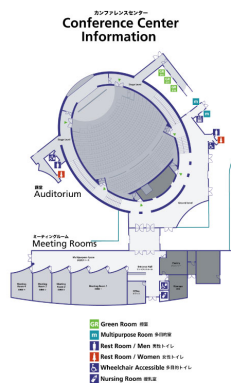
11:15 ~ 12:30 **Lecture 2** (Ryo Takahashi, Nagoya Univ.) at Conference Room
 “The category of maximal Cohen-Macaulay modules (2)”

12:30 ~ 14:00 -*Lunch* ●-

14:00 ~ 15:30 **Lecture** (David Eisenbud, MSRI) at **B250**
 “The Development of a Mathematics Research Center: MSRI and its History”
 “Planning a random walk: Commutative Algebra in Statistics”

15:30 ~ 17:45 **Campus Tour**

18:00 ~ 19:30 -*Dinner* ●-



<p>”The Development of a Mathematics Research Center: MSRI and its History”</p>	<p>MSRI opened its doors to its first programs in the fall of 1982. Over the years it has grown and changed, becoming a center known very widely among mathematicians. I will survey the original motivations and the subsequent development, and give some account of the many activities in which the Institute now engages.</p>
<p>Planning a random walk: Commutative Algebra in Statistics.</p>	<p>I’ll explain how a basic construction in commutative algebra called Groebner bases can help to measure statistical variations by random sampling.</p>

May 24 (Wed.) /Seaside House

8:00 ~ 9:00 -*Breakfast**

9:30 ~ 10:45 **Lecture 1** (Claudia Polini, Univ. Notre Dame)

“Integral closure, minimal reduction, cores (3)”

11:15 ~ 12:30 **Lecture 2** (Ryo Takahashi, Nagoya Univ.)

“The category of maximal Cohen-Macaulay modules (3)”

12:30~ 12:45 Photo session (we take a group photo)

12:45 ~ 14:00 -*Lunch**

14:00 ~ 15:00 **Free Time**

15:00 ~ 15:30 -*Tea Break**

15:30 ~ 17:45 **Exercises**

Group A at Seminar Room

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 2 (Takahashi)	Takahashi, Matsui
16:45 ~ 17:45	Exercise for Lecture 1 (Polini)	Polini, Ma

Group B at Chura Hall

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 1 (Polini)	Martinez, support
16:45 ~ 17:45	Exercise for Lecture 2 (Takahashi)	Araya, support

18:00 ~ 19:30 **Reception** *



May 25 (Thu.) /Seaside House

8:00 ~ 9:00 -*Breakfast**-

9:30 ~ 10:45 **Lecture 1** (Claudia Polini, Univ. Notre Dame)
 “Integral closure, minimal reduction, cores (4)”

11:15 ~ 12:30 **Lecture 2** (Ryo Takahashi, Nagoya Univ.)
 “The category of maximal Cohen-Macaulay modules (4)”

12:30 ~ 14:00 -*Lunch**-

14:00 ~ 15:00 **Free Time**

15:00 ~ 15:30 -*Tea Break**-

15:30 ~ 17:45 **Exercises**

Group A at Seminar Room

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 2 (Takahashi)	Takahashi, Araya,
16:45 ~ 17:45	Exercise for Lecture 1 (Polini)	Polini, Martinez

Group B at Chura Hall

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 1 (Polini)	Ma, support
16:45 ~ 17:45	Exercise for Lecture 2 (Takahashi)	Matsui, support

18:00 ~ 19:30 -*Dinner**-

May 26 (Fri.) /Seaside House

8:00 ~ 9:00 -*Breakfast**-

9:30 ~ 10:45 **Lecture 1** (Claudia Polini, Univ. Notre Dame)
 “Integral closure, minimal reduction, cores (5)”

11:15 ~ 12:30 **Lecture 2** (Ryo Takahashi, Nagoya Univ.)
 “The category of maximal Cohen-Macaulay modules (5)”

12:30 ~ 14:00 -*Lunch**-

14:00 ~ 15:00 **Free Time**

15:00 ~ 15:30 -*Tea Break**-

15:30 ~ 17:45 **Exercises**

Group A at Seminar Room

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 2 (Takahashi)	Takahashi, Araya
16:45 ~ 17:45	Exercise for Lecture 1 (Polini)	Polini, Martinez

Group B at Chura Hall

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 1 (Polini)	Ma, support
16:45 ~ 17:45	Exercise for Lecture 2 (Takahashi)	Matsui, support

18:00 ~ 19:30 -*Dinner**-

Please pay the Excursion fee (JPY 2,000 cash only!)
to the OIST staff by 17:00, May 26 (Fri)
if you want to participate our excursion.

May 27 (Sat.)

8:00 ~ 9:00 -Breakfast*-

9:30 ~ 17:45 Excursion (Tour conductor: Ken-ichi Yoshida)

Excursion fee: JPY 2,000 per person.

Notice: Lunch is NOT included in this tour!

9:30	LV OIST seaside house
10:40 ~ 14:30	Ocean Expo Park Churaumi Aquarium (Lunch Time)
14:50 ~ 15:40	Nakijin Castle ruins
16:10 ~ 17:10	Okashigoten Confectionary Shop
17:30	AR OIST seaside house



<https://churaumi.okinawa/>



Nakijin Castle, or Nakijin Gusuku (Ryukyuan castle or fortress) is located in Nakijin Village, Okinawa, Japan. It was the residence of the Ryukyuan Kingdom governor and is currently in ruins. Work began on its construction in the late 13th century and it had reached its final form by the beginning of the 15th century. The castle is strategically sited on a lone hill, well defended by natural features (river, cliffs and deep valley). The fortress includes several sacred Utaki groves, reflecting the gusuku's role as a center of religious activity. It is famous for the Hikan cherries which bloom in northern Okinawa between mid-January and early February.

<http://nakijinjo.jp/english/index.html>

May 28 (Sun.)

8:00 ~ 9:00 -Breakfast*-

9:00 ~ Free Time

Please eat Lunch (Dinner) at a favorite restaurant!

Time Schedule (2nd week)

May 29 (Mon.) / Seaside House

8:00 ~ 9:00 -*Breakfast**-

9:30 ~ 10:45 **Lecture 1** (Claudiu Raicu, Notre Dame)
 “Determinantal ideals (1)”

11:15 ~ 12:30 **Lecture 2** (Shunsuke Takagi, Univ. Tokyo)
 “The F-pure thresholds (1)”

12:30 ~ 14:00 -*Lunch**-

14:00 ~ 15:00 **Free Time**

15:00 ~ 15:30 -*Tea Break**-

15:30 ~ 17:45 **Exercises**

Group A at Seminar Room

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 2 (Takagi)	Takagi, Ejiri
16:45 ~ 17:45	Exercise for Lecture 1 (Raicu)	Raicu, Jeffries

Group B at Chura Hall

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 1 (Raicu)	Boocher, support
16:45 ~ 17:45	Exercise for Lecture 2 (Takagi)	Sato, support

18:00 ~ 19:30 -*Dinner**-

May 30 (Tue.) /Seaside House

8:00 ~ 9:00 -*Breakfast**-

9:30 ~ 10:45 **Lecture 1** (Claudiu Raicu, Notre Dame)
 “Determinantal ideals (2)”

11:15 ~ 12:30 **Lecture 2** (Shunsuke Takagi, Univ. Tokyo)
 “The F-pure thresholds (2)”

12:30 ~ 14:00 -*Lunch**-

14:00 ~ 15:00 **Free Time**

15:00 ~ 15:30 -*Tea Break**-

15:30 ~ 17:45 **Exercises**

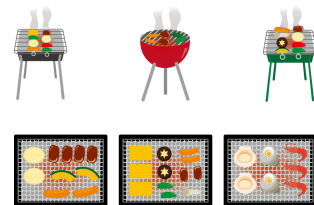
Group A at Seminar Room

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 2 (Takagi)	Takagi, Ejiri
16:45 ~ 17:45	Exercise for Lecture 1 (Raicu)	Raicu, Jeffries

Group B at Chura Hall

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 1 (Raicu)	Boocher, support
16:45 ~ 17:45	Exercise for Lecture 2 (Takagi)	Sato, support

18:00 ~ 19:30 -*BBQ* at sea side-



May 31 (Wed.) /Seaside House

8:00 ~ 9:00 -*Breakfast**-

9:30 ~ 10:45 **Lecture 1** (Claudiu Raicu, Notre Dame)
 “Determinantal ideals (3)”

11:15 ~ 12:30 **Lecture 2** (Shunsuke Takagi, Univ. Tokyo)
 “The F-pure thresholds (3)”

12:30 ~ 14:00 -*Lunch**-

14:00 ~ 15:00 **Free Time**

15:00 ~ 15:30 -*Tea Break**-

15:30 ~ 17:45 **Exercises**

Group A at Seminar Room

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 2 (Takagi)	Takagi, Sato
16:45 ~ 17:45	Exercise for Lecture 1 (Raicu)	Raicu, Boocher

Group B at Chura Hall

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 1 (Raicu)	Jeffries, support
16:45 ~ 17:45	Exercise for Lecture 2 (Takagi)	Ejiri, support

18:00 ~ 19:30 -*Dinner**-

June 1 (Thu.) /Seaside House

8:00 ~ 9:00 -*Breakfast**-

9:30 ~ 10:45 **Lecture 1** (Claudiu Raicu, Notre Dame)
 “Determinantal ideals (4)”

11:15 ~ 12:30 **Lecture 2** (Shunsuke Takagi, Univ. Tokyo)
 “The F-pure thresholds (4)”

12:30 ~ 14:00 -*Lunch**-

14:00 ~ 15:00 **Free Time**

15:00 ~ 15:30 -*Tea Break**-

15:30 ~ 17:45 **Exercises**

Group A at Seminar Room

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 2 (Takagi)	Takagi, Sato
16:45 ~ 17:45	Exercise for Lecture 1 (Raicu)	Raicu, Boocher

Group B at Chura Hall

	Contents	person in charge
15:30 ~ 16:30	Exercise for Lecture 1 (Raicu)	Jeffries, support
16:45 ~ 17:45	Exercise for Lecture 2 (Takagi)	Ejiri, support

18:00 ~ 19:30 -*Dinner**-

June 2 (Fri.) /Seaside House

8:00 ~ 9:00 *-Breakfast*-*

9:30 ~ 10:45 **Lecture 1** (Claudiu Raicu, Notre Dame)
“Determinantal ideals (5)”

11:15 ~ 12:30 **Lecture 2** (Shunsuke Takagi, Univ. Tokyo)
“The F-pure thresholds (5)”

12:30 ~ 14:00 *-Lunch*-*

No common dinner (You can eat dinner at your favorite restaurants in the town.)

