

## SEMAINE I / WEEK I: RINGS AND REPRESENTATIONS WITH ONE INVARIANT

**Lundi 23 juin/ Monday June 23** – Background

8:00-9:00. Breakfast and registration.

**9:00-10:30 : Manjul Bhargava**

Introduction and perspective

10:30. Pause Café / Coffee break

**11:00-12:00 : Eyal Goren**

Algebraic groups, representation theory, and invariant theory

12:00-2:00. Dîner/Lunch

**2:00-3:00 : Eknath Ghate**

Basic algebraic number theory (number fields, class groups, why they are useful/interesting)

3:00. Pause café / Coffee break

**3:30-5:00 : Andrew Granville**

Basics of binary quadratic forms and Gauss composition

**Mardi 24 juin/ Tuesday June 24** – Background II

8:30. Petit déjeuner/ Breakfast

**9:00-10:00 : Henri Darmon**

Curves, geometric aspects

10:00. Pause café/ Coffee break

**10:30-12:00 : Andrew Granville**

Basic analytic number theory

12:00-2:00. Dîner/Lunch

**2:00-3:30 : Henri Darmon**

Curves, diophantine aspects

3:30. Pause café/ Coffee break

**Mercredi 25 juin/ Wednesday June 25** – Rings and representations with one invariant,I

8:30. Petit déjeuner/ Breakfast

**9:00-10:30 : Eyal Goren**

More algebraic groups, representation theory and invariant theory.

10:30. Pause café/ Coffee break

**11:00-12:30 : Melanie Matchett-Wood**

Cubic rings

12:30-2:30. Dîner/Lunch

**2:30-4:00 : Melanie Matchett-Wood**

Quartic and quintic rings

4:00. Pause café/ Coffee break

**4:30-5:30. : Jennifer Park, Arul Shankar and Frank Thorne**

Problem session

**Jedi 26 Juin/ Thursday June 26** – Rings and representations with one invariant II

8:30. Petit déjeuner/ Breakfast

**9:00-10:30 : Manjul Bhargava**

How to count rings and fields I

10:30. Pause Café/ Coffee break

**11:00-12:30 : Melanie Matchett-Wood**

Rings associated to binary  $n$ -ic forms, composition of  $2 \times n \times n$  boxes and class groups

12:30-2:30. Dîner/Lunch

**2:30-4:00 : Takashi Taniguchi**

The zeta functions attached to prehomogeneous vector spaces

4:00. Pause café/ Coffee break

**4:30-5:30 : Arul Shankar and Frank Thorne**

Problem session

**Vendredi 27 juin / Friday June 27** – Rings and representations with one invariant III

8:30. Petit déjeuner/ Breakfast

**9:00-10:30 : Manjul Bhargava**

How to count rings and fields II

10:30. Pause café/ Coffee break

**11:00-12:30 : Melanie Matchett-Wood**

Heuristics for number field counts and applications to curves over finite fields.

12:30-2:30. Dîner/Lunch

**2:30-3:30 : Bjorn Poonen**

Moduli space of rings

3:30. Pause Café/ Coffee break

**4:00-6:00. : Arul Shankar and Frank Thorne**

Problem session

**Samedi 28 juin / Saturday June 28**

8:30. Petit déjeuner/ Breakfast

**9:00-10:30 : Frank Thorne**

Zeta Function methods

10:30. Pause café/ Coffee break

**11:00-12:30 : Eknath Ghate**

Counting Artin representations and modular forms of eight one

**SEMAINE II/ WEEK II: CURVES AND REPRESENTATIONS WITH A FREE RING OF INVARIANTS**

**Lundi 30 juin / Monday, June 30**

8:30. Petit déjeuner/ Breakfast

**9:00-10:30 : Arul Shankar**

Binary quartic forms; bounded average rank of elliptic curves

10:30. Pause Café/ Coffee break

**11:00-12:30 : Bjorn Poonen**

Selmer groups and heuristics I

12:30-2:30. Dîner/Lunch

**2:30-3:30. :Michael Stoll**

Rational points on curves

3:30. Pause café/ Coffee break

**4:00-5:00 : Jennifer Park and Arul Shankar**

Problem session

**Mardi 1<sup>er</sup> juillet / Tuesday, July 1**

8:30. Petit-déjeuner/ Breakfast

**9:00-10:30 :Wei Ho**

Coregular spaces and genus one curves

10:30. Pause Café/ Coffee break

**11:00-12:30. :Benedict Gross**

Arithmetic invariant theory and hyperelliptic curves I

12:30-2:30. Dîner/Lunch

**2:30-4:00 : TBA**

4:00. Pause Café/ Coffee break

**4:30-5:30 : Wei Ho and Jerry Wang**

Problem session

### **Mercredi 2 juillet / Wednesday, July 2**

8:30. Petit-déjeuner/ Breakfast

**9:00-10:30 : Manjul Bhargava**

Applications to the Birch and Swinnerton-Dyer conjecture.

10:30. Pause Café/ Coffee break

**11:00-12:30 : Bjorn Poonen**

Selmer groups and heuristics II

12:30-2:30. Dîner/Lunch

**2:30-3:30 : Benedict Gross**

Arithmetic invariant theory and hyperelliptic curves II

3:30. Pause Café/ Coffee break

**4:00-6:00 : Jennifer Park and Jerry Wang**

Problem session: [problem 1](#) – [problem 2](#)

### **Jeudi 3 juillet / Thursday, July 3**

8:30. Petit-déjeuner/ Breakfast

**9:00-10:30 : Bjorn Poonen**

Chabauty methods and hyperelliptic curves

10:30. Pause Café/ Coffee break

**11:00-12:30 : Jordan Ellenberg**

Topological and algebraic geometry method over function fields I

12:30-2:30. Dîner/Lunch

**2:30-3:30 : Jerry Wang**

Counting methods over global fields

3:30. Pause Café/ Coffee break

**4:00-6:00 : Jordan Ellenberg, Jennifer Park and Jerry Wang**

Problem session

**6:00 : RECEPTION**

### **Vendredi 4 juillet / Friday, July 4**

8:30. Petit-déjeuner/ Breakfast

**9:00-10:00 : Jennifer Park**

The Chabauty method and symmetric powers of curves

10:00. Pause Café/ Coffee break

**10:30-12:00 : Jordan Ellenberg**

Topological and algebraic geometry methods over function fields II

[12:30-2:00. Dîner/Lunch](#)

**2:00-4:00 : Manjul Bhargava**

Future perspectives