

Second Meeting of the TWMA 2017



The Tunisian Women Mathematician's Association organizes

The first mathematical school in Tunisia of

Algebraic Geometry and Applications

September 11-15, 2017, Hammamet, Tunisia

Scientific Committee

M. Akriche (IPEIB, Tunisia)
A. Baklouti (SMT Chair, Tunisia)
A. Ben Abda (ENIT, Tunisia)
A. Dickenstein (FCEN, Argentina)
L. Ghammam (ENSI Caen, France)
S. Khenissy (TWMA Chair, Tunisia)

Organizing Committee

S. Bennaceur (IPEIM, Tunisia)
B. Hafassa (ESIVL, France)
L. Jaafar Belaid (INSAT, Tunisia)
Y. Rébaï (EPT, Tunisia)

Welcome Committee

K. Mbarki (FSM, Tunisia)
M. Moalla (ISBST, Tunisia)
S. Saanouni (ISMAI, Tunisia)

Contact: tunwma@gmail.com

To register (From January 30, 2017 to May 30, 2017): <https://tunwma.com>

About this school

The mathematical specialty of Algebraic Geometry is not very developed in Tunisia and we have very few Tunisian specialists in this important field, hence our great motivation to make this mathematical school to invite the young Tunisian students to discover it.

This Mathematical School is dedicated to Master Degree students to deepen and enrich their mathematical training and to PhD students who already are making a thesis in the field of algebraic geometry or who need to either discover or complement their mathematical training in this field. Two mini-courses in algebraic geometry will be presented during 5 days by **Ms. Marie-Françoise ROY** and **Ms. Elise LORENZO GARCIA** (15 hours). The courses include a significant proportion of time devoted to background and introductory material. We want this school to offer an exciting opportunity for students and teachers to meet, exchange ideas, discuss and evolve. The aim is to encourage, energize and motivate mathematical research in general and in this area in particular.

Schudle

Sunday, September 10, 2017

Arrival and welcome of participants all day (badge, Note block and Schudle)

19h30: Dinner

21h00-21h15: Welcome Speech by the President of the TWMA

Monday 11/09/2017	Tuesday 12/09/2017	Wednesday 13/09/2017	Thursday 14/09/2017	Friday 15/09/2017
<i>Mini-courses</i>				
9h00-10h30 Mini-course Marie-Françoise Roy	9h00-10h30 Mini-course Marie-Françoise Roy	9h00-10h30 Mini-course Marie-Françoise Roy	9h00-10h30 Mini-course Marie-Françoise Roy	9h00-10h30 Mini-course Marie-Françoise Roy
11h00-12h30 Mini-course Elisa Lorenzo García	11h00-12h30 Mini-course Elisa Lorenzo García	11h00-12h30 Mini-course Elisa Lorenzo García	11h00-12h30 Mini-course Elisa Lorenzo García	11h00-12h30 Mini-course Elisa Lorenzo García
<i>Conferences</i>				
<i>Chairperson</i> M. Akriche	<i>Chairperson</i> M. Boudabra	<i>Chairperson</i> L. Ghammam	<i>Chairperson</i> A. Bezia	<i>Chairperson</i> M. Smirani
15h00-15h45 I. Yengui (Conference)	15h00-15h45 M. Smirani (Conference)	15h00-15h45 T.O. Celik (Conference)	15h00-15h45 D. Boucher (Conference)	15h00-15h45 H. Louati (Conference)
16h00-16h45 L. Ghammam (Conference)	16h00-16h45 A. Bezia (Conference)	16h00-16h45 M. Akriche (Conference)	16h00-16h45 N. Ouled Azaiez (Conference)	16h00-16h45 M. Sadek (Conference)
17h00-17h45 M. Boudabra (Conference)		17h00-17h45 K. Mbarki (Conference)	17h00-17h45 S. Bouanani (Conference)	
18h00-19h00 <i>Know your Neighbor !</i>	17h30-18h30 <i>Ceremony : TWMA Trophies of Honor.</i>	18h30-19h15 <i>Ceremony : TWMA Awards for Best PhD Math and Appl. Math. for Tunisian Women.</i>		17h30-18h30 <i>General Assembly of the TWMA.</i>

2 mini-courses

Marie-Francoise ROY, Professor Emeritus, Université de Rennes 1, France

Title : *Real Algebraic Geometry: Quantitative and Algorithmic Methods*

Summary

The aim of these lectures is to discuss three key algorithmic problems in real algebraic geometry :

- Count real roots and characterize them.
- Decide the existence of real solutions for systems of equalities and inequalities and eliminate quantifiers.
- Compute topological invariants of semi-algebraic sets and various methods to solve them.

Reference

S. Basu, R. Pollack, M.-F. Roy, Algorithms in real algebraic geometry, Springer-Verlag.

Elisa LORENZO GARCIA, Université de Rennes 1, France

Title : *Elliptic curves: Theory and Applications to Cryptography*

Summary

In this course we will review the theory of elliptic curves. We will focus on the cryptography applications.

- Introduction to elliptic curves and the group law.
- The j-invariant and the torsion points.
- Elliptic curves over finite fields.
- The discrete logarithm problem.
- Elliptic curve cryptography.

References

J. H. Silverman, The Arithmetic of Elliptic Curves, Springer, 1986.
L. C. Washington, Elliptic Curves: Number Theory and Cryptography, 2003.

13 Conferences

1. **Mouadh Akriche (Tunisia)** : *Real and complex fibrations of low genus.*
2. **Abdelhamid Bezia (Algeria)** : *Multiplicity and Bézout Theorem.*
3. **Saber Bouanani (Tunisia)** : *Li's criterion and the Riemannian hypothesis for function fields.*
4. **Delphine Boucher (France)**: *Some generalities on the self-dual cyclic codes.*
5. **Maher Boudabra (France)**: *Prime numbers - Cryptography - Computational methods over finite fields.*
6. **Turku Ozlum Celik (France)**: *Arithmetic in hyperelliptic curves.*
7. **Loubna Ghammam (France)** : *Elliptic curves from the useless to the indispensable .*
8. **Hanen Louati (Tunisia)** : *Semi-classical quantization rules for a periodic orbit of hyperbolic type.*
9. **Khadija Mbarki (Tunisia)** : *Waring's problem, taxicab numbers and other sums of powers.*
10. **Mohammad Sadek (Egypt)**: *Elliptic curves and continued fractions.*
11. **Maha Smirani (Tunisia)** : *Deformation of complex fibrations of genus 2, I.*
12. **Nejib Ouled Azaiez (Saudi Arabia)**: *Intersection of Arithmetic varieties.*
13. **Ihsen Yengui (Tunisia)** : *Algorithms for computing syzygies over valuation rings.*

Mini-projects related to the two courses

To be detailed soon

Posters for PhD students or Masters 2 students

PhD students and Masters 2 degree students in Algebraic Geometry can participate with posters.