

ALGORITHMIC D-MODULE THEORY

ORGANIZERS: MOHAMED BARAKAT AND FRANCISCO-JESÚS CASTRO-JIMÉNEZ

1. INVITED EXPERTS

- FRANCISCO-JESÚS **Castro-Jiménez** (Sevilla, Spain), castro@us.es
- JAVIER FERNÁNDEZ **de Bobadilla** DE OLAZABAL (UNED, Spain), javier@mat.uned.es
- NOBUKI **Takayama** (Kobe, Japan), takayama@math.kobe-u.ac.jp
- ULI **Walther** (Purdue, USA), walther@math.purdue.edu

2. SCHEDULE

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
08:15-09:00		Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
09:00-09:55	Departure	S. Blatt & M. Kirschmer	S. Jambor	Takayama III	A. Lorenz II	J. de Bobadilla III
09:55-10:15		Tea	Tea	Tea	Tea	Tea
10:15-11:10		G. Welper & K. Schindelar	F. Castro-Jiménez III	N. Takayama IV & H. Nakayama	J. de Bobadilla I	U. Walther IV
11:15-12:10		F. Castro-Jiménez I	F. Castro-Jiménez IV & J. Martin-Morales	U. Walther I	U. Walther II & C. Berkesch	J. de Bobadilla IV
12:15-14:00		Lunch	Lunch	Lunch	Lunch	Lunch & Dep.
14:00-15:00		J. Jongen & F. Eisele	N. Takayama I	Free/Hike	J. de Bobadilla II	End
15:05-16:05		F. Castro-Jiménez II	N. Takayama II	Free/Hike	U. Walther III	
16:10-16:30		Tea	Tea	Free/Hike	Tea	
16:30-17:30		A. Lorenz I	Discussions	Free/Hike	Discussions	
17:35-18:10	Arrival	informal discussions	informal discussions	Free/Hike	informal discussions	
18:15-19:00	Dinner	Dinner	Dinner	Dinner	Dinner	

3. PH.D. STUDENTS TALKS (in chronological order)

- Simon Blatt & Markus Kirschmer:** Toric varieties I: combinatorics
Gerrit Welper & Kristina Schindelar: Toric varieties II: toric ideals
Jan Jongen & Florian Eisele: Very basic intersection theory and SERRE's formula
Arne Lorenz (I): Generalities about sheaves
Sebastian Jambor: Coherent analytic sheaves
Jorge Martin-Morales: On the computation of the BERNSTEIN-SATO polynomials
Hiromasa Nakayama: Introduction to the tangent cone method in D -modules
Arne Lorenz (II): Abstract DE RHAM theorem
Christine Berkesch: GKZ systems

4. EXPERTS TALKS

Francisco-Jesús Castro-Jiménez:

- (1) Computational methods for logarithmic D -modules I
- (2) Computational methods for logarithmic D -modules II
- (3) Computational methods for logarithmic D -modules III

Nobuki Takayama:

- (1) Introduction to computing logarithmic cohomology groups
- (2) Restriction and integration algorithms
- (3) Hypergeometric integrals and twisted cohomology groups
- (4) Literatures for further study and open questions related to the tangent cone method

Uli Walther: Hypergeometric systems

- (1) Motivation
- (2) GKZ systems
- (3) Rank jumps
- (4) Regularity

Javier Fernández de Bobadilla de Olazabal:

- (1) Isolated singularities and the GAUSS-MANIN connection I
- (2) Isolated singularities and the GAUSS-MANIN connection II
- (3) Isolated singularities and the GAUSS-MANIN connection III
- (4) Isolated singularities and the GAUSS-MANIN connection IV