

# Workshop Model Theory and Combinatorics

## 29 January - 2 February 2018, IHP

### Scientific Committee

[Emmanuel Breuillard](#) (Münster/Orsay)

[Dugald MacPherson](#) (Leeds)

[Sergei Starchenko](#) (Notre Dame, chair)

[Frank Wagner](#) (Lyon 1).

For more information, please visit <http://modvac18.math.ens.fr/W1.html>

**«Model Theory, Combinatorics and Valued Fields»**

Paris January 8<sup>th</sup> – April 6<sup>th</sup>, 2018

**«Model Theory and Combinatorics»**

Paris, January 29<sup>th</sup> – February 2<sup>nd</sup>, 2018

**Amphitheater Hermite and Darboux**



**Scientific Committee:** Emmanuel Breuillard (Cambridge/Orsay), Dugald MacPherson (Leeds), Sergei Starchenko (Notre Dame, Chair) and Frank Wagner (Lyon 1)

**Invited speakers:**

**Abdul Basit** (Notre Dame)  
**Saugata Basu** (Purdue)  
**Martin Bays** (Münster)  
**Artem Chernikov** (UCLA)  
**Gabriel Conant** (Notre Dame)  
**Mauro Di Nasso** (Pisa)  
**Mirna Džamonja** (East Anglia)

**David Evans** (Imperial)  
**Timothy Gowers** (Cambridge)  
**Jan Hubička** (Charles U.)  
**Peter Keevash** (Oxford)  
**Alex Lubotzky** (Hebrew U.)  
**Maryanthe Malliaris** (Chicago)  
**Dhruv Mubayi** (UI Chicago)

**Jaroslav Nešetřil** (Prague)  
**Patrice Ossona de Mendez** (EHSS)  
**János Pach** (EPFL Lausanne and Renyi)  
**Micha Sharir** (Tel Aviv)  
**Pierre Simon** (Berkeley)  
**Balázs Szegedi** (Alfréd Rényi)  
**Caroline Terry** (Maryland)  
**Todor Tsankov** (Université Paris Diderot)

## PROGRAM

### Monday January 29<sup>th</sup>

**09.00 am – 09.30 am** Registration and welcome coffee – IHP ground floor

09.30 am – 10.20 am **Alex Lubotzky** First order rigidity of high-rank arithmetic groups.

10.20 am – 10.50 am Coffee break IHP ground floor

10.50 am – 11.40 am **Balázs Szegedi** TBA.

11.50 am – 02.00 pm Informal Discussion and Lunch

02.00 pm – 02.50 pm **Artem Chernikov** Model-theoretic distality and incidence combinatorics.

03.00 pm – 03.50 pm **János Pach** Let's talk about multiple crossings.

03.50 pm – 04.20 pm Coffee break IHP ground floor

04.20 pm – 05.10 pm **Martin Bays** Pseudo-finite dimensions, modularity, and generalisations of Elekes-Szabó.

### Tuesday January 30<sup>th</sup>

09.30 am – 10.20 am **Dhruv Mubayi** New Developments in Hypergraph Ramsey Theory.

10.20 am – 10.50 am Coffee break IHP ground floor

10.50 am – 11.40 am **Micha Sharir** The Algebraic Revolution in Combinatorial and Computational Geometry: State of the Art.

11.50 am – 02.00 pm Informal Discussion and Lunch

02.00 pm – 02.50 pm **Mirna Džamonja** Absolute notions in model theory.

03.00 pm – 03.50 pm **Patrice Ossona de Mendez** Modelling limits.

03.50 pm – 04.20 pm Coffee break IHP ground floor

04.20 pm – 05.10 pm **David Evans** Automorphism groups and Ramsey properties of sparse graphs.

05.20 pm – 06.00 pm **Poster Session**

06.00 pm – 07.30 pm **Wine and Cheese Reception, Poster Discussion** – IHP Ground floor and Room 01

### Wednesday January 31<sup>st</sup>

09.30 am – 10.20 am **Abdul Basit** Rank Bounds for Design Matrices and Applications.

10.20 am – 10.50 am Coffee break IHP ground floor

10.50 am – 11.40 am **Pierre Simon** On finite dimensional omega-categorical structures and NIP theories.

11.50 am – 12.40 pm **Jaroslav Nešetřil** Ramsey classes and sparsity for finite models.

**Free Afternoon**

## Thursday February 1<sup>st</sup>

|                     |                               |                                                                                                      |
|---------------------|-------------------------------|------------------------------------------------------------------------------------------------------|
| 09.30 am – 10.20 am | <b>Peter Keevash</b>          | More designs.                                                                                        |
| 10.20 am – 10.50 am | Coffee break                  | IHP ground floor                                                                                     |
| 10.50 am – 11.40 am | <b>Mauro Di Nasso</b>         | Using nonstandard natural numbers in Ramsey Theory.                                                  |
| 11.40 am – 02.00 pm | Informal Discussion and Lunch |                                                                                                      |
| 02.00 pm – 02.50 pm | <b>Caroline Terry</b>         | A stable arithmetic regularity lemma in finite-dimensional vector spaces over fields of prime order. |
| 03.00 pm – 03.50 pm | <b>Gabriel Conant</b>         | Stable and NIP regularity in groups.                                                                 |
| 03.50 pm – 04.20 pm | Coffee break                  | IHP ground floor                                                                                     |
| 04.20 pm – 05.10 pm | <b>Todor Tsankov</b>          | Metrizable universal minimal flows and Ramsey theory.                                                |

## Friday February 2<sup>nd</sup>

|                     |                               |                                                                           |
|---------------------|-------------------------------|---------------------------------------------------------------------------|
| 09.30 am – 10.20 am | <b>Timothy Gowers</b>         | A quantitative inverse theorem for the $U^4$ norm over finite fields.     |
| 10.20 am – 10.50 am | Coffee break                  | IHP ground floor                                                          |
| 10.50 am – 11.40 am | <b>Saugata Basu</b>           | Quantitative bounds on the topology of semi-algebraic and definable sets. |
| 11.50 am – 12.40 pm | <b>Maryanthe Malliaris</b>    | Combinatorics and saturation.                                             |
| 12.40 pm – 02.40 pm | Informal Discussion and Lunch |                                                                           |
| 02.40 pm – 03.30 pm | <b>Jan Hubička</b>            | Ramsey theorems for classes of structures with functions and relations.   |
| 03.30 pm – 04.00 pm | Coffee break                  | IHP ground floor                                                          |

Abstracts are available on the website of the trimester «Model Theory, Combinatorics and Valued Fields»: <http://modvac18.math.ens.fr/W1.html>

