

# Benjamin Druart

*PhD Student in Model Theory*

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## Education

- 2010 - 2011 **Master 2 - Mathematical Logic**, *Université Paris Diderot - Paris 7*, France.
- 2008 - 2009 **Training for french competition "Agrégation de mathématiques"**, *Université Paris Diderot - Paris 7*, France.
- 2007 - 2008 **Master 1 - Fundamental Mathematics**, *Université Paris Diderot - Paris 7*, France.
- 2004 - 2007 **Licence - Clinical Psychology**, *Université Paris Diderot - Paris 7*, France.
- 2003 - 2006 **Licence - Mathematics**, *Université Paris Diderot - Paris 7*, France.

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## Master thesis

- title **Groups definable in local fields and pseudofinite fields**
- supervisor Zoé Chatzidakis
- description I studied an article of the same title of Hrushovski and Pillay. The main result establish a local isomorphism between a definable group in the field and a algebraic group defined in an algebraically closed field.

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## PhD Research

- subject **Structure of definable groups in p-adic fields**
- supervisors 2011 - 2013 Eric Jaligot  
2013 - Tuna Altinel
- institution 2011 - 2013 Institut Fourier, Université Joseph Fourier, Grenoble, France  
2013 - Institiut Camille Jordan, Universté Lyon 1, Lyon, France
- employer CNRS - Centre National de Recherche Scientifique
- description The aim of the thesis is to understand the structure of definable groups in p-adic fields, especially Cartan subgroups. We want to know if their is a finite number of class of conjugacy of Cartan subgroup. Currently, we use some algebraic materials (description of anisotropic torus) to deduce some model theoretic result (torsion in definable abelian group, semialgebraicity of some definable groups in p-minimal expansion, ...)

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## Publications

- 2013 **Cartan Subgroups and Generosity in  $SL(2, \mathbb{Q}_p)$** , *preprint*, arXiv:1304.0426v2.  
We show that there exist a finite number of Cartan subgroups up to conjugacy in  $SL(2, \mathbb{Q}_p)$ , and we describe all of them. We show that the Cartan subgroup consisting of all diagonal matrices is generous and it is the only one up to conjugacy.

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## Presentations

- seminar **Séminaire de Logique**, *january 2014*, Lyon, France.  
*Commutative linear definable groups in  $p$ -adics*
- conference **British PostGraduate Model Theory Conference**, *january 2014*, Leeds, UK.  
*A survey of Cartan Subgroups in Model Theory*
- seminar **Théorie des modèles et groupes**, *november 2013*, Paris 7, France.  
*Cartan subgroup in  $SL(2, \mathbb{Q}_p)$  and generosity*
- seminar **Seminar for postgraduate students**, *march 2012*, Grenoble, France.  
*Introduction to Mathematical Logic and Gödel Theorem*

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## Experience

- 2011- **Teacher of mathematics in university**, *Université Joseph Fourier*, Grenoble, France.
- 2012 - 2013 **Redactor for the magazine dedicated to the doctoral students of Grenoble**, *Université Joseph Fourier*, Grenoble, France.
- 2009 - 2010 **Teacher of mathematics in high school**, *Collège Honoré de Balzac*, Neuilly sur Marne, France.
- 2006 - 2008 **Mathematical tutoring in university**, *Université Paris Diderot- Paris 7*, France.
- 2006 - 2007 **Traineeship in psychiatric hospital**, *Center Théophile Roussel*, Montesson, France.

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## Languages

- French **mother tongue**
- English **fluent**

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## Interests

- association In 2012-2013, I was a member of the animation team for group of Young Professionals in the association "Isèreanybody" in Grenoble.
- association From 2003 to 2011, I was volunteer and vice-president of the association "Bib de rue". The aim of this association is to bring culture and to receive the children of a deprived urban neighborhood of the town of Sartrouville.
- theater I practiced theater during 10 years