

Rémi Jaoui

Curriculum vitæ

Personal details

Born on 20th October, 1989 in Paris

Citizenship : French

Address **Department of Pure Mathematics, University of Waterloo.**
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Current position

2017– 2019 **Post-doctoral fellow**, in the Department of Pure Mathematics of the University of Waterloo, Ontario, Canada.

Supervisor : Rahim Moosa

Education

2014–2017 **PhD. in Mathematics**, Université Paris-Saclay, Orsay.

Supervisors : Jean-Benoît Bost (Orsay) and Martin Hils (Münster)

Thesis title : *Geodesic flows and model theory of differential fields*

2012–2014 **Master**, Université Paris VI, Master de Mathématiques Fondamentales.

Supervisors : Jean-Benoît Bost and Martin Hils

Master's thesis title : *Geometry of differential equations and Mordell-Lang conjecture for function fields*

2011–2012 **Research internship**, Université Paris VII.

Supervisor : Elisabeth Bouscaren (CNRS - Orsay)

Topic : *Groups definable in local fields and pseudo-finite fields*

2009–2014 **Student at the Ecole Normale Supérieure**, Paris.

2010– 2011 First year of MA in Mathematics

2009–2010 Bachelor in Mathematics.

Awards

2007 **Third price in the Concours général of Mathematics.**

2007 **Member of French National Team**, in the *International Mathematical Olympiads*, Hanoi, Vietnam.

Research Activities

Research experiences

- 2017–Present **Post-doctoral fellow**, in the department of Pure Mathematics, University of Waterloo, Canada.
Supervisor : Rahim Moosa
Theme : Geometric stability theory, Zilber trichotomy, algebraic foliations and algebraic differential equations.
- 2014–2017 **PhD. in Mathematics**, in the Département de mathématiques de l'université d'Orsay, (Equipe Arithmétique et Géométrie Algébrique).
Supervisors : Jean-Benoît Bost (Orsay) et Martin Hils (Münster)
Title : Flots géodésiques et théorie des modèles des corps différentiels
External examiners for the manuscript :
Ehud Hrushovski (Oxford University) External examiner
David Marker (University of Illinois) External examiner
Jury of the oral presentation :
Zoe Chatzidakis (Ecole Normale Supérieure) President of the jury
Jean-Benoît Bost (Orsay) PhD supervisor
Elisabeth Bouscaren (Orsay) Internal examiner
Charlotte Hardouin (Toulouse) External examiner
Martin Hils (Münster) PhD supervisor
Martin Ziegler (Freiburg) External examiner

Preprints and publications

- 2018 **Rational factors of D -varieties of dimension 3 with real Anosov flow.**
- 2017 **Differential fields and Geodesic flows II : Geodesic flows of pseudo-Riemannian algebraic varieties**, *arXiv :1703.02890*.
To appear in the Israel Journal of Mathematics
- 2016 **Corps différentiels et Flots géodésiques I : Orthogonalité aux constantes pour les équations différentielles autonomes**, *arXiv :1612.06222v2*.

Invited lectures

- Sept 2018 **Model Theory Seminar**, University of Waterloo, Waterloo, Canada.
Disintegration phenomena for planar algebraic vector fields
- July 2018 **DART IX**, University of Leeds, England.
Disintegrated differential equations
- March 2018 **Conference Model Theory and Applications**, Institut Henri Poincaré, Paris.
Disintegrated differential equations and mixing Anosov flows
- Dec 2017 **2017 CMS Winter meeting, Model Theory session**, Waterloo, Canada.
On the model theory of geodesic differential equations
- Sept 2017 **Model Theory Seminar**, University of Waterloo, Waterloo, Canada.
On the model theory of geodesic differential equations I and II
- Nov 2016 **Oberseminar Modelltheorie, Geometrie und Gruppentheorie**, Universität Münster, Münster.
Orthogonality to the constants for geodesic differential equations
- Sept 2016 **Séminaire de Théorie des modèles et Groupes**, Université Paris VII, Paris.
Nouveaux exemples d'équations différentielles orthogonales aux constantes

- Mai 2016 **Model Theory Month in Münster - Conference**, Universität Münster, Münster.
New examples of types in DCF_0 orthogonal to the constants
- Avr 2016 **Séminaire d'Arithmétique et de Géométrie Algébrique**, *Journée des docteurs*, Université Paris-Sud, Orsay.
Équations différentielles algébriques orthogonales aux constantes
- Nov 2015 **Réseau des Étudiants de Géométrie Algébrique**, Institut Henri Poincaré, Paris.
Structures associées à des équations différentielles algébriques

Other research activities

- Fall 2018 **Organization of a biweekly reading group**, *joint between the University of Waterloo and the University of McMaster*.
Subject : Instances of Zilber's trichotomy for pseudo-finite sets and dimensions
- Winter 2018 **Participation to the trimester : Model theory, combinatorics and valued fields**, *in the Institut Henri Poincare*, Paris.

Teaching activities

Teaching assistant in Orsay University

- 2014-2017 **Linear algebra for second year students (L2)**, *Teaching assistant*, in Orsay University.
Weekly teaching load : two hours and a half per week during one semester
Around 20 students
Professor in charge of the lectures : Olivier Fouquet
- 2014-2017 **Algebra for third year students (L3)**, *Teaching assistant*, in Orsay University.
Weekly teaching load : two hours and a half per week during one semester
Around 30 students
Professor in charge of the lectures : Laurent Clozel

Instructor in the University of Waterloo

- Fall 2017 **MATH135 : Algebra for honours mathematics**, *Instructor*, in the University of Waterloo.
Weekly teaching load : four hours per week
Around 50 students
Topics : Introduction to proofs (quantifiers, induction, contradiction), moduli arithmetic, polynomials over the complex numbers.
- Spring 2018 **MATH207 : Calculus 3 (non-specialist level)**, *Instructor*, in the University of Waterloo.
Weekly teaching load : three hours per week
Around 20 students
Topics : smooth space curves, partial derivatives, line integrals, multiple integrals, vector fields, Stoke's phenomena.
- Fall 2018 **PMATH330 : Introduction to mathematical logic**, *Instructor*, in the University of Waterloo.
Weekly teaching load : three hours per week
Around 60 students
Topics : Propositional logic (tableaux, Soundness and Completeness theorems) and introduction to predicate logic (structures, tableaux, Completeness theorem).