

Christian Urech

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Education

- 2013 - 2017 **Ph.D. in Mathematics**, University of Basel and University of Rennes 1
Advisors: Jérémy Blanc and Serge Cantat
Thesis title: "Subgroups of Cremona groups"
awarded *summa cum laude*
- 2010 - 2013 **Master of Science in Mathematics**, University of Basel
Advisor: Hanspeter Kraft
- 2007 - 2010 **Bachelor of Science in Mathematics**, University of Basel

Employment

- 2018 - present **Postdoctoral researcher**, Imperial College London,
funded by the Swiss National Science Foundation
- 2014 - 2017 **Research Assistant**, University of Basel
- 2010 - 2013 **Teaching Assistant**, University of Basel

Research Interests

Cremona groups, groups of birational transformations, polynomial automorphisms, birational geometry, algebraic groups, classical algebraic geometry.

Publications

1. C. Urech, "On homomorphisms between Cremona groups", <https://arxiv.org/abs/1603.03294>, (2016), to appear in "Annales de l'Institut Fourier".
2. C. Urech, "Remarks on the degree growth of birational transformations", <https://arxiv.org/abs/1606.04822> (2016), to appear in "Mathematical Research Letters".
3. C. Urech, S. Zimmermann, "A new presentation of the plane Cremona group", <https://arxiv.org/abs/1606.04822>, submitted.
4. C. Urech, "Elliptic subgroups of the Cremona group", <https://arxiv.org/abs/1606.04822>, submitted.
5. C. Urech, "Simple groups of birational transformations in dimension two", <https://arxiv.org/abs/1606.04822>, submitted.
6. A. Liendo, A. Regeta, C. Urech, "Characterization of toric surfaces by their automorphism groups", <https://arxiv.org/abs/1606.04822>, submitted.

Teaching

As a teaching assistant I gave exercise classes for the following courses at the University of Basel:

Fall 2017	Introduction to Probability Theory and Statistics
Spring 2017	Number Theory
Fall 2016	Linear Algebra I
Spring 2015	Projective Curves and Surfaces II (graduate)
Fall 2014	Projective Curves and Surfaces I (graduate)
Fall 2012	Seminar for high school students
Spring 2012	Geometry
Fall 2011	Complex Analysis
Spring 2011	Linear Algebra II
Fall 2010	Real Analysis

Research talks

2018 **Characterization of toric surfaces by their automorphism groups**

Algebraic Geometry - Mariusz Koras in memoriam

Institute of Mathematics, Polish Academy of Sciences, Warsaw, Poland

Les sous-groupes simples du groupe de Cremona

Séminaire de Géométrie algébrique

Université Angers, France

The Cremona group and its action on an infinite dimensional hyperboloid (together with Anne Lonjou)

Mini course at a workshop on birational Geometry

Higher School of Economics, Moscow

Three lectures on Cremona groups

Mini course

Imperial College, London

2017 **Subgroups of elliptic elements of the Cremona group**

Donau-Rhein-Modelltheorie-Seminar

Universität Passau, Germany

Simple subgroups of the Cremona group

Joint Seminar in Algebraic and Complex Geometry Basel – Freiburg – Nancy – Strasbourg

IRMA, Université de Strasbourg, France

Simple subgroups of the Cremona group

Edge days 2017: Birkar's boundedness and Cremona groups

University of Edinburgh, United Kingdom

Sous-groupes simples du groupe de Cremona

Séminaire de Géométrie et Topologie

Institut des Mathématiques, Université Paul Sabatier, Toulouse, France

Simple subgroups of the Cremona group

Basel - Dijon joint seminar on algebraic geometry
Departement of Mathematics, University of Basel, Switzerland

Degree sequences of birational transformations

Basel - Lausanne meeting on birational geometry
Departement of Mathematics, University of Basel, Switzerland

Homomorphisms between Cremona groups

Algebraic Geometry Seminar
Department of Mathematics, University of Illinois at Chicago, USA

Degree sequences of birational transformations

Complex Analysis, Dynamics and Geometry Seminar
Department of Mathematics, University of Michigan, USA

2016 **On homomorphisms between Cremona groups**

Seminar “Algèbre et géométries”
Institut Fourier, University of Grenoble, France

Some homomorphisms between groups of birational transformations

Geometry Seminar
Departement of Mathematics, Università degli Studi di Ferrara, Italy

Suites des degrés des transformations birationnelles

ANR Lambda meeting for PhD-students in dynamics
IRMAR, University of Rennes 1, France

Le groupe de Cremona

Graduate student Seminar
Institut de mathématiques, University of Toulouse III, France

2015 **Le groupe de Cremona et l’espace de Picard-Manin**

Graduate student Seminar
IRMAR, University of Rennes 1, France

On homomorphisms between Cremona groups

School and Workshop on finite subgroups of Cremona groups
Fondazione Bruno Kessler, Trento, Italy

On Cremona representations

Geometry and Algebra Seminar
Departement of Mathematics, University of Basel, Switzerland

2014 **On the Cremona group**

Graduate student Seminar
Departement of Mathematics, University of Basel, Switzerland

On the Cremona group

Graduate student Seminar
Institut des mathématiques, Université de Bourgogne, Dijon, France

Morphisms between Cremona groups

ANR Birpol and Del Duca meeting
IRMAR, University of Rennes 1, France

Sur le groupe de Cremona

Séminaire des jeunes chercheurs en géométrie 'Pampers'
IRMAR, University of Rennes 1, France

2013 **The affine Cremona group and its automorphisms**

Séminaire des jeunes chercheurs en géométrie 'Pampers'
IRMAR, University of Rennes 1, France

On automorphisms of the affine Cremona group as an abstract group and as an ind-group

Geometry and Algebra Seminar
Departement of Mathematics, University of Basel, Switzerland

Poster Presentations at Conferences

2018 **Young Geometric Group Theory VII**, Les Diablerets, Switzerland

2016 **Affine geometry, hyperbolicity, complex analysis**, International Workshop, Institut Fourier, University of Grenoble, France

Cremona Conference, University of Basel, Switzerland

New methods in birational geometry, CIMI, Toulouse, France

2015 **AMS Summer institute in algebraic geometry**, University of Utah, USA

Grants and Awards

2017 Early Postdoc.mobility Grant of the Swiss National Science Foundation (78 000 CHF)

2014 Cotutelles-Grant of the State Secretariat for Education, Research and Innovation of Switzerland (10 000 CHF)

2013 Grant of the Geldner Foundation (21 000 CHF)

Grant of the Janggen Pöhn Foundation (7 000 CHF)

Grant of the "Freie Akademische Gesellschaft Basel" (14 000 CHF)

2008-2017 Mentee of the Swiss Study Foundation

Related Experience

2016 Co-organizer of the Cremona Conference, University of Basel

2014 - 2017 Co-organizer of the Mathematical Graduate Seminar, University of Basel

2012 - 2013 Project leader for the study week boys@science for 'Swiss Youth in Science'