Jakub Witaszek

Personal Details

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Education

2014–now **Imperial College London**, PhD (Supervisor: Prof. Paolo Cascini)
London School of Geometry and Number Theory
On birational geometry in positive characteristic
Expected graduation date: May 2018

2012–2014 **Bonn University, Germany**, MSc (Supervisor: Prof. Daniel Huybrechts)
Mathematics, graduated with overall grade: *1.0*

2009–2012 **Warsaw University, Poland**, BSc (Supervisor: Prof. Jarosław Wiśniewski)
Mathematics, graduated with overall grade: *excellent*

Research interests

Birational geometry and the Minimal Model Program
Algebraic geometry in characteristic $p > 0$

Papers and preprints

2017 *On the canonical bundle formula for fibrations of relative dimension* 1 *in positive characteristic*
arXiv:1711.04380 (preprint)

2017 *Liftability of Frobenius and images of toric varieties* – with P. Achinger and M. Zdanowicz
arXiv:1708.03777 (preprint)

2017 *On the rationality of klt singularities in positive characteristic* – with C. Hacon
arXiv:1706.03204 (preprint)

2017 *On base point free theorem and Mori dream spaces for lc threefolds over* $\bar{\mathbb{F}}_p$ – with Y. Nakamura
Mathematische Zeitschrift

2017 *On log del Pezzo surfaces in large characteristic* – with P. Cascini and H. Tanaka
Compositio Mathematica

2017 *Klt del Pezzo surfaces which are not globally F-split* – with P. Cascini and H. Tanaka
International Mathematics Research Notices

2017 *Effective bounds on singular surfaces in positive characteristic*
Michigan Mathematical Journal

2015 *On base point free theorem for lc threefolds over* $\bar{\mathbb{F}}_p$ – with D. Martinelli and Y. Nakamura
Algebra and Number Theory

2015 *The degeneration of the Grassmannian into a toric variety and the eigenspaces of a torus action*
Journal of Algebraic Statistics

Major achievements and scholarships

2014-2019	London School of Geometry and Number Theory scholarship
2012-2014	Bonn International Graduate School scholarship
2011-2012	Scholarship of the Minister of Science and Higher Education, Poland
2009-2012	European Union and department scholarships, Poland
2009	50th International Mathematics Olympiad, Bremen - bronze medal
2009	60th Polish Mathematics Olympiad - 4th place, silver medal

Invited research talks

2017	Geometry & Topology seminar, Imperial College London
	Liftability of the Frobenius morphism and images of toric varieties
2017	Algebraic geometry seminar, University of Utah
	Liftability of the Frobenius morphism and images of toric varieties
2016	Edge days, University of Edinburgh
	Birational geometry over the algebraic closure of a finite field
2016	Tokyo-Princeton algebraic geometry conference, Princeton University
	Global F-regularity of projective surfaces and liftability to the second Witt vectors
2016	Workshop on birational geometry, Warwick University
	Frobenius splittings in birational geometry
2016	Oberseminar: Algebra, Zahlentheorie und Algebraische Geometrie, Freiburg University
	Frobenius splittings in birational geometry
2016	Seminar IMPANGA, IMPAN, Warsaw
	Frobenius splittings in birational geometry
2015	Seminar Algebra & Geometry, Basel University
	Effective bounds on positive characteristic singular surfaces

2015	Postgraduate Conference in Complex Geometry, Cambridge University
	Effective bounds on positive characteristic singular surfaces
2015	Géométrie Algébrique en Liberté, Leuven
	Base point freeness of line bundles in positive characteristic
2014	Workshop in Birational Geometry and Fano Varieties, Imperial College London
	On base point free theorem for log canonical threefolds over $\overline{\mathbb{F}}_p$
2014	University of Tokyo
	The degeneration of the Grassmannian into a toric variety and the eigenspaces of a torus action

Other selected talks

2017	*Dual complexes & Kontsevich-Soibelman skeleta*, Junior geometry seminar, UCL
2017	*Dual complexes & Kontsevich-Soibelman skeleta*, Junior geometry seminar, University of Utah
2017	*Perfectoid spaces*, Private reading seminar (several talks)
2016	*Tropical curves & maximally degenerate algebraic curves*, Study group, ICL
2016	*Basic structures in log geometry*, London Number Theory Study Group, ICL
2016	*Complexe de de Rham-Witt et cohomologie cristalline*, Private reading seminar (several talks)
2015	*Bend-and-break*, Junior geometry seminar, ICL
2015	*Fourier-Mukai functor & characterisation of abelian varieties*, Junior geometry seminar, ICL

Professional activities

Referee: Journal of Algebra, Manuscripta Mathematica

Co-organising postgraduate school *New advances in Fano manifolds* (December 2017)

Research visits, collaborations, and programs

2017	University of Utah, US – as a guest of Prof. C. Hacon, two months
2014	University of Tokyo, Japan – as a guest of Prof. Y. Kawamata, two weeks
2013	Topics in higher dimensional algebraic geometry, Pragmatic, Catania, Italy – three weeks
2012	Undegraduate research school, Weizmann Institute of Science, Israel – eight weeks

Conferences and schools

2017	*Birational Classification, Derived Categories, and Moduli Spaces*, Oberwolfach, Germany
2017	*British algebraic geometry meeting*, Cambridge, UK
2017	*Moduli of K-stable varieties*, Rome, Italy
2017	*Positivity in algebraic and complex geometry*, Edinburgh, UK
2017	*Arizona Winter School: Perfectoid Spaces*, Tucson, US
2016	*Workshop on birational geometry and reduction to positive characteristic*, Edinburgh, UK
2016	*Higher Dimensional Algebraic Geometry and Characteristic p*, Luminy, France
2016	*Higher dimensional algebraic geometry*, Summer school and Conference, Utah, US
2016	*Local and global methods in algebraic geometry*, University of Illinois at Chicago, US
2016	*Tokyo-Princeton algebraic geometry conference*, Princeton University, US
2016	*British algebraic geometry meeting*, Edinburgh, UK
2016	*School: Varieties of Calabi-Yau type*, IMPAN, Poland
2016	*Workshop on birational geometry*, Warwick University, UK
2015	*Summer Research Institute on Algebraic Geometry*, Utah, US
2015	*Géométrie Algébrique en Liberté*, Leuven, Belgium
2015	*New techniques in birational geometry*, Stony Brook, US
2014	*Birational methods in hyperkähler geometry*, Bonn, Germany
2014	*Birational geometry and Fano varieties*, Imperial College London, UK
2014	*Birational geometry and foliations*, Bonn, Germany
2013	*Topics in higher dimensional algebraic geometry*, Pragmatic, Catania, Italy

Posters presented

2017	*Liftability of Frobenius*, British algebraic geometry meeting, Cambridge, UK
2016	*Frobenius splittings in birational geometry*, Higher dimensional algebraic geometry, Utah, US
2016	*Frobenius splittings in birational geometry*, British algebraic geometry meeting, Edinburgh, UK
2015	*The magic of* $\overline{\mathbb{F}}_p$ (with D. Martinelli, Y. Nakamura), Summer Research Institute, Utah, US

Teaching and educational outreach

2017	*Real analysis*, demonstrating and marking, Autumn trimester, Imperial College London
2016	*Algebra 2*, demonstrating and marking, Autumn trimester, Imperial College London
2016	*Real analysis*, demonstrating and marking, Autumn trimester, Imperial College London
2016	London International Tutors, private tutoring
2016	*Analysis*, demonstrating and marking, Spring trimester, Imperial College London

2015 *Linear algebra*, demonstrating, Autumn trimester, Imperial College London

2015 *Galois theory*, marking, Autumn trimester, Imperial College London

2015 *Analysis*, demonstrating, Spring trimester, Imperial College London

2015–2017 Invigilating and 2nd-marking, Imperial College London

2011–2013 Polish Children's Fund program for talented pupils

- Volunteering, tutoring, and evaluating applications
- Holding workshops: *Algebraic curves and Cayley-Bacharach theorem*, *Introduction to group theory*, *Vectors in geometry*

2013 *Chevalley-Warning theorem and p-regular graphs* – an article, written in Polish, for popular science journal *Delta* aimed at students and high school pupils

2008–2011 Stanisław Staszic High School in Warsaw

- Teaching at a math circle and organising mathematical lectures
- Organising three, week–long, workshops in mathematics and computer science
- Recognised by Polish Mathematics Olympiad's Committee for help in preparing students for the 61st and 62nd Mathematics Olympiad

Pre-PhD seminars and workshops

2012-2014 Organising student reading seminars *Abelian varieties*, *Toric varieties*, Bonn University

2011–2012 President of *Algebra and Category Theory Student Society*, Warsaw University

- Organising weekly seminars,
- Organising school *Elliptic Curves*, Teresin

2011-2012 Talks at workshops *Étale Cohomology* and *Local Class Field Theory*, Polish Academy of Science

2011 Talk at *II Conference of the Mathematics Student Society*, Teresin

Other activities and skills

2012-2014 Experience in using *Sage, Magma and Macaulay2*

2011 Internship at Google, *Software Engineer*, London – three months

References

Prof. Paolo Cascini

Prof. Christopher Hacon

Prof. James M^{c}Kernan

Dr Johannes Nicaise

Prof. Richard Thomas (teaching)