

# FRANCESCA BALESTRIERI, MA (CANTAB), MSc (OXON), DPhil (OXON)

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Nationality: Italian

## EMPLOYMENT

- **Assistant Professor, The American University of Paris** 2020–
- **Marie Curie Fellow, IST Austria** 2019–2020  
Mentor: Prof Tim Browning
- **Post-Doc Fellow, Max-Planck-Institut für Mathematik** 2017–2019  
Mentor: Prof Yuri I Manin
- **Stipendiary Lecturer in Pure Mathematics, Pembroke College, University of Oxford** 2016–2017
- **Freelance Editor, Oxford University Press** 2015–2016

## EDUCATION

- **Artificial Intelligence Professional Program, Stanford University** 2020–  
Courses passed so far: XCS229i Machine Learning.
- **Laurea Magistrale in Scienze Filosofiche, Università Ca' Foscari** 2018–2020  
Result: 110/110 cum laude
- **DPhil in Number Theory, University of Oxford** 2013–2017  
Research Interests: Number Theory, Arithmetic Geometry  
Supervisor: Prof E Victor Flynn
- **MSc Mathematics and the Foundations of Computer Science, University of Oxford** 2012–2013  
Result: Distinction
- **BA (Hons) Mathematical Tripos, University of Cambridge** 2009–2012  
(Upgraded to MA in 2016)  
Result: Class I (each year)

## ACADEMIC VISITS

- **Institut Henri Poincaré, Paris, France** Apr–Jul 2019  
Participating in the thematic trimester *À la redécouverte des points rationnels*
- **Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany** Dec 2018  
Collaborating with Dr Valentijn Karemaker
- **American University of Beirut, Beirut, Lebanon** Sep 2018  
Visiting Prof Kamal Khuri-Makdisi
- **University of Washington, Seattle, USA** Sep–Dec 2015  
Visiting Prof Bianca Viray

## PREPRINTS AND PUBLISHED ARTICLES

- **Hilbert's Tenth Problem and the Inverse Galois Problem**  
(with J. Park, A. Shlapentokh)  
Preprint, 2020.
- **Explicit uniform bounds for Brauer groups of singular K3 surfaces**  
(with A. Johnson, R. Newton)  
Submitted, 2020.
- **Average Bateman-Horn for Kummer polynomials**  
(with N. Rome)  
Submitted, 2020.
- **Some remarks on strong approximation and applications to homogeneous spaces of linear algebraic groups**  
To appear in *Proceedings of the AMS*, 2020.
- **Arithmetic of rational points and zero-cycles on products of Kummer varieties and K3 surfaces**  
(with R. Newton)  
*International Mathematics Research Notices*, 2021 no. 6 (2021), 4255–4279.
- **Brauer-Manin obstruction and families of generalised Châtelet surfaces over number fields**  
*International Journal of Number Theory* 15 no. 2 (2019), 289–308.
- **Elliptic fibrations on covers of the elliptic modular surface of level 5**

- (with J. Desjardins, A. Garbagnati, C. Maistret, C. Salgado)  
*WINE II: Contributions to Number Theory and Arithmetic Geometry*, AWM Springer Series 11 (2018), 159–197.
- **Iterating the algebraic étale-Brauer set**  
*Journal of Number Theory* 182 (2018), 284–295
  - **Obstruction sets and extensions of groups**  
*Acta Arithmetica* 173 (2016), 151–181.
  - **Insufficiency of the Brauer-Manin obstruction for rational points on Enriques surfaces**  
(with J. Berg, M. Manes, J. Park, B. Viray)  
*Directions in Number Theory: Proceedings of the 2014 WIN3 Workshop*, AWM Springer Series 3 (2016), 1–32.

## BOOKS

- F. Balestrieri, L. Balestrieri, **Guerra Digitale** (2019) Luiss University Press. (In Italian.)

## FELLOWSHIPS, SCHOLARSHIPS, AND PRIZES

- **Junior Fellowship**, Institut Mittag-Leffler (Declined) Mar – Apr 2021
- **Marie Skłodowska-Curie Actions Individual Fellowship**, European Commission (€174000) 2019–2021
- **IST Plus Fellowship**, IST Austria (Declined) 2019–2021
- **Post-Doctoral Fellowship**, Max-Planck-Institut für Mathematik 2017–2019
- **EPSRC Studentship, fees & maintenance**, Mathematical Institute, University of Oxford 2013–2017
- **Jex-Blake Scholarship**, LMH, University of Oxford 2013–2014
- **Academic Development Grant (Ginsberg Fund)**, LMH, University of Oxford 2013
- **Anne Jemima Clough Prize**, Newnham College, University of Cambridge 2012
- **Chadburn Third-Year Scholarship**, Newnham College, University of Cambridge 2011–2012
- **Marjorie Stewart Tunnicliffe Prize**, Newnham College, University of Cambridge 2011
- **Anne Jemima Clough Prize**, Newnham College, University of Cambridge 2011
- **Mathilde Blind Second-Year Scholarship**, Newnham College, University of Cambridge 2010–2011
- **Jane Dora Archibald Prize**, Newnham College, University of Cambridge 2010

## TEACHING (THE AMERICAN UNIVERSITY OF PARIS)

- **MA1020A Applied Statistics I**, Lecturer. Spring 2021
- **MA1030A Calculus I**, Lecturer. Spring 2021
- **MA1005A Math for Life**, Lecturer. Fall 2020
- **MA1020A Applied Statistics I**, Lecturer. Fall 2020

## TEACHING (UNIVERSITY OF OXFORD)

- **Stipendiary Lectureship**, Pembroke College. 2016–2017
- **M1 Groups and group actions**. First year course. Trinity Term 2017
- **A.SO Group Theory**. Second year course. Trinity Term 2017
- **A4 Integration**. Second year course. Hilary Term 2017
- **M1 Groups and group actions**. First year course. Hilary Term 2017
- **M2 Analysis II: Continuity and Differentiability**. First year course. Hilary Term 2017
- **A0 Linear Algebra**. Second year course. Michaelmas Term 2016
- **A2 Metric Spaces and Complex Analysis**. Second year course. Michaelmas Term 2016
- **M2 Analysis I: Sequences and Series**. First year course. Michaelmas Term 2016
- **A.SO Graph Theory**, Tutor for New College. Second year course. Trinity Term 2016
- **C2.6 Introduction to Schemes**, Consultation Sessions Tutor. Trinity Term 2016
- **C2.6 Introduction to Schemes**, Class Tutor. Fourth year/graduate course. Hilary Term 2016
- **A.SO Graph Theory**, Tutor for New College. Second year course. Trinity Term 2015
- **B3.4 Algebraic Number Theory**, Consultation Sessions Tutor. Trinity Term 2015
- **C3.7 Elliptic Curves**, Consultation Sessions Tutor (2 Sets). Trinity Term 2015
- **B3.4 Algebraic Number Theory**, Class Tutor. Third year course. Hilary Term 2015
- **C3.7 Elliptic Curves**, Class Tutor (2 Sets). Fourth year/graduate course. Hilary Term 2015
- **C3.4 Algebraic Geometry**, Class Tutor. Fourth year/graduate course. Michaelmas Term 2014
- **B3.1 Galois Theory**, TA (2 sets). Third year course. Michaelmas Term 2014
- **B9b Algebraic Number Theory**, TA. Third year course. Hilary Term 2014
- **C9.1b Elliptic Curves**, TA. Fourth year/graduate course. Hilary Term 2014
- **C9.2a Analytic Number Theory**, TA. Fourth year/graduate course. Michaelmas Term 2013

## TEACHING (UNIVERSITY OF WASHINGTON)

- **Algebraic Number Theory**, 2 lectures (substituting Prof Viray). Graduate course. Fall Quarter 2015

## COMMITTEES AND SERVICE

- Reviewer for the Mathematical Reviews of the AMS. 2017–
- Peer-reviewer for *Tunisian Journal of Mathematics*, *Advances in Mathematics*, *Compositio Mathematica*, *Transactions of the AMS*, Springer's "Proceedings of WINE3". 2017–
- Organiser of the Junior Number Theory seminar, University of Oxford. 2015–2016
- Undergraduate admissions interviewer at New College, University of Oxford. Michaelmas Term 2014
- Organiser of the Young Researchers in Mathematics 2015 conference, University of Oxford. 2013–2015
- Undergraduate admissions interviewer at New College, University of Oxford. Michaelmas Term 2013
- Facilitator for the Good Practices Steering Group, Mathematical Institute, University of Oxford. 2013–2017

## INVITED TALKS

- *The arithmetic of zero-cycles on products of K3 surfaces and Kummer varieties* 9 Mar 2021  
VaNTAGe Math Seminar (Online)
- *Strong approximation for homogeneous spaces of linear algebraic groups* 25 Feb 2021  
WORKing Seminar (Online)
- *Strong approximation for homogeneous spaces of linear algebraic groups* 26 Oct 2020  
Number Theory Seminar, University of Warwick, UK. (Online)
- *Strong approximation for homogeneous spaces of linear algebraic groups* 2 Oct 2020  
Séminaire Théorie des Nombres, Institut de Mathématiques de Bordeaux, France. (Online)
- *On the arithmetic of rational points and zero-cycles on products of Kummer varieties and K3 surfaces* 20 Nov 2019  
Algebra and Geometry seminar, KTH Royal Institute of Technology, Sweden.
- *On the arithmetic of rational points and zero-cycles on products of Kummer varieties and K3 surfaces* 25 Apr 2019  
"Reinventing rational points" seminar, Institut Henri Poincaré, France.
- *On the arithmetic of rational points and zero-cycles on products of Kummer varieties and K3 surfaces* 23 Apr 2019  
Dutch Mathematical Congress 2019, Veldhoven, Netherlands.
- *On the arithmetic of rational points and zero-cycles on products of Kummer varieties and K3 surfaces* 5 Apr 2019  
Number Theory Seminar, University of Pennsylvania, USA.
- *On the arithmetic of rational points and zero-cycles on products of Kummer varieties and K3 surfaces* 15 Mar 2019  
Intercity Number Theory Seminar, Utrecht University, Netherlands.
- *On the arithmetic of rational points and zero-cycles on products of Kummer varieties and K3 surfaces* 14 Nov 2018  
Groups, Arithmetic and Algebraic Geometry Seminar, EPFL, Switzerland.
- *On the arithmetic of rational points and zero-cycles on products of Kummer varieties and K3 surfaces* 18 Sep 2018  
Number Theory Seminar, IST Austria, Austria.
- *On the arithmetic of rational points and zero-cycles on products of Kummer varieties and K3 surfaces* 4 Sep 2018  
CAMS/MATH Seminar, American University of Beirut, Lebanon.
- *On the arithmetic of rational points and zero-cycles on products of Kummer varieties and K3 surfaces* 2 Jul 2018  
Rational Points on Schiermonnikoog, Netherlands.
- *Arithmetic of rational points and 0-cycles of degree 1 on Kummer varieties* 28 Mar 2018  
Number Theory Lunch Seminar, Max-Planck-Institut für Mathematik, Bonn, Germany.
- *Categoriale: un cambiamento di paradigma in matematica* (in Italian) 7 Dec 2017  
Seminario di Logica, Università Ca' Foscari, Venice, Italy.
- *Studying arithmetic properties of rational points on varieties* 26 Oct 2017  
MPI-Oberseminar, Max-Planck-Institut für Mathematik, Bonn, Germany.
- *Iterating the algebraic étale-Brauer obstruction* 19 May 2017  
Number Theory Seminar, University of Cambridge, UK.
- *When do rational points on varieties exist?* 15 Mar 2017  
Pure Mathematics Seminar, University of Reading, UK.
- *Iterating the algebraic étale-Brauer obstruction* 17 Feb 2017  
RTG Lectures in Arithmetic Geometry at Rice, Rice University, Houston, USA.
- *Iterare l'insieme di étale-Brauer algebrico* (in Italian) 22 Dec 2016  
Algebraic Geometry and Representation Theory in Rome, Università Sapienza, Rome, Italy.
- *Iterating the algebraic étale-Brauer obstruction* 27 Oct 2016  
Number Theory Seminar, University of Manchester, UK.
- *Iterating the algebraic étale-Brauer obstruction* 12 Oct 2016  
Linfoot seminar, Bristol University, UK.

- *Obstructions to the existence of rational points on Enriques surfaces* 13 Jun 2016  
GAeL XXIV, Nesin Mathematics Village, Turkey.
- *Iterating the algebraic étale-Brauer obstruction* 23 May 2016  
Leibniz Universität Hannover, Hannover, Germany.
- *Modular methods for Diophantine equations* 25 Apr 2016  
Junior Number Theory seminar, University of Oxford, UK.
- *Iterating the algebraic étale-Brauer obstruction* 25 Jan 2016  
Junior Number Theory seminar, University of Oxford, UK.
- *Iterating the algebraic étale-Brauer obstruction* 17 Nov 2015  
AGNT Seminar, Rice University, Houston, USA.
- *Belyi's Theorem* 12 Nov 2015  
Dessins d'enfants seminar, University of Washington, Seattle, USA.
- *Iterating the algebraic étale-Brauer obstruction* 10 Nov 2015  
UW Number Theory Seminar, University of Washington, Seattle, USA.
- *Obstructions: a dictionary* 19 Aug 2015  
Young Researchers in Mathematics 2015, University of Oxford, UK.
- *Insufficiency of the Brauer-Manin obstruction for Enriques surfaces* 13 Apr 2015  
TCC Number Theory day, Imperial College, London, UK.
- *Insuffisance de l'obstruction de Brauer-Manin pour les surfaces d'Enriques* (in French) 10 Apr 2015  
Séminaire "Variétés Rationnelles", Institut Henri Poincaré, Paris, France.
- *Obstruction sets and extensions of groups* 9 Feb 2015  
Junior Number Theory seminar, University of Oxford, UK.
- *Ranks of elliptic curves* 24 Nov 2014  
Junior Number Theory seminar, University of Oxford, UK.
- *Obstructions!* 2 Jul 2014  
Young Researchers in Mathematics 2014, University of Warwick, UK.
- *Obstructions to the Hasse principle* 25 Nov 2013  
Junior Number Theory seminar, University of Oxford, UK.

#### CONFERENCES AND WORKSHOPS

- **Rational Points 2019** 14–20 Jul 2019  
Franken-Akademie Schloss Schney, Schney, Germany.
- **Dutch Mathematical Congress** 23–24 Apr 2019  
Veldhoven, Netherlands.
- **À la redécouverte des points rationnels** 15 Apr – 12 Jul 2019  
Institut Henri Poincaré, Paris, France.
- **Rational Points on Schiermonnikoog** 2 – 6 Jul 2018  
Schiermonnikoog, Netherlands.
- **XIV Giornate di Geometria Algebrica ed Argomenti Correlati** 29 May – 1 Jun 2018  
Università di Genova, Genova, Italy.
- **Rational Points 2017** 2–8 Jul 2017  
Franken-Akademie Schloss Schney, Schney, Germany.
- **RTG Lectures in Arithmetic Geometry at Rice** 17–19 Feb 2017  
Rice University, Houston, USA.
- **Algebraic Geometry and Representation Theory in Rome** 22 Dec 2016  
Università Sapienza, Rome, Italy.
- **Women In Numbers Europe 2** 25–30 Sep 2016  
Lorentz Center, Leiden, Netherlands.
- **GAeL XXIV** 13–17 Jun 2016  
Nesin Mathematics Village, Turkey.
- **Fundamental groups in Arithmetic Geometry** 26 May – 3 Jun 2016  
Institut Henri Poincaré, Paris, France.
- **Explicit Methods in Number Theory (in honour of John Cremona's 60th Birthday)** 4–8 Apr 2016  
University of Warwick, UK.
- **Sage Days 71: Explicit p-adic methods in number theory** 20–24 Mar 2016  
University of Oxford, UK.
- **Oxford Cryptography Day** 17 Mar 2016  
University of Oxford, UK.
- **Western Algebraic Geometry Symposium** 17–18 Oct 2015

- University of Washington, Seattle, USA.
- **LMS-CMI summer school on Diophantine Equations** 15–19 Sep 2015  
Wales, UK.
  - **Young Researchers in Mathematics 2015** 17–20 Aug 2015  
University of Oxford, UK.
  - **Rational Points 2015** 28 Jun – 5 Jul 2015  
Franken-Akademie Schloss Schney, Schney, Germany.
  - **Rational Points/ Pontos Racionais** 25–29 May 2015  
IMPA, Rio de Janeiro, Brazil.
  - **Elliptic Curves, Modular Forms and Iwasawa Theory** 25–27 Mar 2015  
In honour of J Coates' 70th Birthday, University of Cambridge, UK.
  - **Arizona Winter School 2015: Arithmetic and Higher-Dimensional Varieties** 14–18 Mar 2015  
The Southwest Center for Arithmetic Geometry, University of Arizona, USA.
  - **Algebraic Geometry and Representation Theory in Rome** 18–19 Dec 2014  
Università Roma 3, Rome, Italy.
  - **Comptage d'objets arithmétiques (rangs des courbes elliptiques)** 10–14 Nov 2014  
CRM, Université de Montréal, Canada.
  - **Analytic Number Theory** 29 Sep – 3 Oct 2014  
Clay Research Conference and Workshops, University of Oxford, UK.
  - **Bounded Gaps Between Primes** 22–26 Sep 2014  
LMS-CMI Research School, University of Oxford, UK.
  - **Arithmetic of Hyperelliptic Curves** 25 Aug – 5 Sep 2014  
NATO Advanced Study Institute, Ohrid, FYROM.
  - **Young Researchers in Mathematics 2014** 30 Jun – 3 Jul 2014  
University of Warwick, UK.
  - **Women in Numbers 3** 20–25 Apr 2014  
Banff International Research Station, Canada.
  - **Model theory and its interactions with NT and arithmetic geometry** 10–11 Feb 2014  
MSRI, University of California, Berkeley, USA.
  - **Introductory Workshop: Model Theory, Arithmetic Geometry and NT** 3–7 Feb 2014  
MSRI, University of California, Berkeley, USA.
  - **Number Theory and Physics** 29 Sep – 4 Oct 2013  
Clay Research Conference and Workshops, University of Oxford, UK.
  - **Rational Points - Geometric, Analytic and Explicit Approaches** 27–31 May 2013  
EPSRC Warwick Number Theory Symposium, University of Warwick, UK.
  - **Women in Mathematics** 18–19 Apr 2013  
Organised by the LMS. Newton Institute, University of Cambridge, UK.
  - **Foundations of Mathematics: What are they and what are they for?** 10–12 Jul 2012  
Department of Philosophy, University of Cambridge, UK.

#### OTHER RESEARCH EXPERIENCES

- **Research Assistant in Numerical Analysis** Summer 2012  
DAMTP, University of Cambridge.  
Undergraduate summer research project funded by MathWorks.  
Supervisors: Prof A Iserles, Dr C-B Schoenlieb, and Dr S J Cowley.

#### LANGUAGES

- **Italian:** Native speaker
- **English:** Fluent
- **French:** Fluent
- **Modern Standard Arabic:** Beginner