

Sarah Zerbes

CONTACT INFORMATION	Department of Mathematics University College London Gower Street London WC1E 6BT	<i>Phone:</i> 0044 (0)207 679 2834 <i>email:</i> s.zerbes@ucl.ac.uk <i>homepage:</i> http://www.homepages.ucl.ac.uk/~ucahsze/
GENERAL INFORMATION	Nationality Date of Birth Marital Status	German 2nd of August 1978 Married
RESEARCH INTERESTS	Algebraic number theory, L -functions, modular forms, p -adic Hodge theory, Iwasawa theory	
ACADEMIC APPOINTMENTS	Professor, University College London Reader, University College London Research Professor, MSRI, Berkeley Lecturer, University College London Lecturer, University of Exeter EPSRC postdoctoral fellow Chapman Fellow, Imperial College, London Hodge Fellow, IHES, Paris Marie Curie Fellow, Institut Henri Poincaré, Paris Assistant of Prof. Guido Kings, Universität Regensburg	<i>since October 2016</i> <i>October 2014 - September 2016</i> <i>August - December 2014</i> <i>September 2012 - September 2014</i> <i>September 2008 - March 2012</i> <i>September 2008 - August 2011</i> <i>October 2006 - August 2008</i> <i>October 2005 - July 2006</i> <i>March 2004 - June 2004</i> <i>September 2003 - December 2003</i>
UNIVERSITY EDUCATION	University of Cambridge, UK PhD in Pure Mathematics • Dissertation Title: “Selmer groups over non-commutative p -adic Lie extensions” • Advisor: Professor John Coates Mathematical Tripos Part III (with distinction) BA Hons. in Mathematics (first class)	<i>October 2002 - June 2005</i> <i>October 2001 - June 2002</i> <i>October 1998 - June 2001</i>
GRANTS	ERC Consolidator Grant <i>Total value:</i> $\sim \text{€}1,075,000$ <i>Title:</i> Euler systems and the Birch–Swinnerton-Dyer conjecture Leverhulme Trust Research Fellowship <i>Total value:</i> $\sim \text{£}43,000$ EPSRC First Grant <i>Total value:</i> $\sim \text{£}125,000$ <i>Title:</i> p -adic Iwasawa theory for Galois representations Leverhulme Trust Research Fellowship (<i>declined</i>) <i>Total value:</i> $\sim \text{£}40,000$ Royal Society Travel Grant <i>Total value:</i> $\text{£}2700$, intended for the academic visit of Northwestern University EPSRC Postdoctoral Fellowship <i>Total value:</i> $\text{£}239,542$ <i>Title:</i> Explicit reciprocity laws for p -adic fields	<i>from July 2015</i> <i>from September 2014</i> <i>September 2012</i> <i>September 2012</i> <i>January 2011</i> <i>2009</i>

	Royal Society Travel Grant	2007
	<i>Total value: £3600, intended for the travel expenses to Chennai</i>	
	Hodge Fellowship	2005
PRIZES AND SCHOLARSHIPS	Whitehead prize (joint with David Loeffler), awarded by the London Mathematical Society	2015
	Philip Leverhulme Prize (joint with David Loeffler)	2014
	Nomination for the “UCL Students’ Choice Teaching Award”	2014
	Rayleigh-Knight Research Prize, grade 1 (highest category of 4)	2004
	Allan, Meek and Read Scholarship, awarded by the University of Cambridge	2003
	Cambridge European Trust Scholarship	2002 - 2005
	Kings College Research Scholarship	2002 - 2005
	Graduate Scholarship, awarded by the National German Scholarship Foundation	2001
	Graduate Scholarship, awarded by Newnham College	2001
	Jane Dora Archibald Prize, awarded by Newnham College	2000
ACADEMIC MEMBERSHIPS	Member of the American Mathematical Society	since June 2015
	Member of the European Women in Mathematics Society	since September 2011
	Fellow of the Higher Education Academy	since December 2010
	Member of the London Mathematical Society (Council member since November 2016)	since 2004
	Member of the National German Scholarship Foundation	November 1999 - June 2002
PUBLICATIONS	Rankin-Eisenstein classes and explicit reciprocity laws (joint with Guido Kings and David Loeffler) to appear in <i>Cambridge Journal of Mathematics</i> , available from <i>arXiv:1405.3079</i>	
	Iwasawa theory for the symmetric square of a modular form (joint with David Loeffler) to appear in <i>J. Reine Angew. Math.</i> , available from <i>arXiv:1512.03678</i>	
	On the asymptotic growth of Bloch–Kato–Shafarevich–Tate groups of modular forms over cyclotomic extensions (joint with Antonio Lei and David Loeffler) to appear in <i>Canadian Journal of Mathematics</i> , available from <i>arXiv:1510.06441</i>	
	Rankin-Eisenstein classes in Coleman families (joint with David Loeffler) to appear in <i>Res. Math. Sci. (Robert Coleman memorial volume)</i> , available from <i>arXiv:1506.06703</i>	
	Finite polynomial cohomology for general varieties (joint with Amnon Besser and David Loeffler) Invited contribution to <i>p-adic Variation in Number Theory (Glenn Stevens’ 60th birthday)</i> , <i>Annales mathématiques du Québec</i> 40 (2016), no. 1, p.203 - 220, available from <i>arxiv:1405.7527</i>	
	Euler systems for modular forms over imaginary quadratic fields (joint with Antonio Lei and David Loeffler) <i>Compositio Mathematica</i> , vol. 151 (2015), no. 9, p. 1585 - 1625	
	Local epsilon isomorphisms (joint with David Loeffler and Otmar Venjakob) <i>Kyoto Journal of Mathematics</i> , vol. 55 (2015), no. 1, p. 63 - 127	
	Iwasawa Theory and p -adic L -functions over \mathbb{Z}_p^2 -extensions (joint with David Loeffler) <i>International Journal of Number Theory</i> , vol. 10 (2014), no. 8, p. 2045 - 2095	
	Euler systems for Rankin-Selberg convolutions of modular forms (joint with Antonio Lei and David Loeffler) <i>Annals of Mathematics</i> , vol. 180 (2014), no. 2, p. 653 - 771	
	Critical slope p -adic L -functions of CM modular forms (joint with Antonio Lei and David Loeffler) <i>Israel Journal of Mathematics</i> , vol. 198 (2013), no. 1, p. 261 - 282	
	Signed Selmer groups over p -adic Lie extensions (joint with Antonio Lei)	

J. Théorie de Nombres de Bordeaux, vol. 24 (2012), no. 2, p. 377 - 403

Wach modules and critical slope p -adic L -functions (joint with David Loeffler)
J. Reine Angew. Math., vol. 679 (2013), p. 181 - 206

Coleman maps and the p -adic regulator (joint with Antonio Lei and David Loeffler)
Algebra and Number Theory, vol. 5 (2011), no. 8, p. 1095 - 1131

Bloch-Kato exponential maps for local fields with imperfect residue fields
Proc. London Math. Soc., vol. 103 (2011), no. 6, p. 1007 - 1048

Leading terms of Akashi series
Math. Proc. Camb. Phil. Soc., vol. 151 (2011), no. 2, p. 229 - 243

Wach modules and Iwasawa theory for modular forms (joint with Antonio Lei and David Loeffler)
Asian J. Math., vol. 14 (2010) no. 4, p. 475 - 528

Generalized Euler characteristics of Selmer groups
Proc. London Math. Soc., vol. 98 (2009) no. 3, p. 559 - 839

Higher exponential maps and explicit reciprocity laws
Report No. 30/2007, Mathematisches Forschungsinstitut Oberwolfach

Selmer groups over p -adic Lie extensions I
J. London Math. Soc. (2), vol. 70 (2004) no.3, p. 586 - 608

PREPRINTS

Syntomic regulators of Asai-Flach classes (joint with David Loeffler and Chris Skinner)
preprint, August 2016, available from *arxiv:1608.06112*

Euler systems for Hilbert modular forms (joint with Antonio Lei and David Loeffler)
preprint, July 2016, available from *arXiv:1607.07813*

Rankin-Eisenstein classes for modular forms (joint with Guido Kings and David Loeffler)
submitted, January 2015, available from *arxiv:1501.03289*

INVITED
 CONFERENCES

ICM Satellite Conference <i>Automorphic Forms, Galois Representations and L-functions</i> <i>Rio de Janeiro, Brazil</i>	<i>July 2018</i>
Arizona Winter School 2018 <i>Arizona, US</i>	<i>March 2018</i>
Iwasawa 2017 <i>Tokyo, Japan</i>	<i>July 2017</i>
Euler systems and p -adic L -functions <i>Nisyros, Greece</i>	<i>July 2017</i>
European Women in Mathematics Meeting, part of ECM 2016 <i>Berlin, Germany</i>	<i>July 2016</i>
L -functions in Arithmetic, in honour of Karl Rubin's 60th birthday <i>Harvard, US</i>	<i>June 2016</i>
British Mathematics Colloquium <i>Bristol, UK</i>	<i>March 2016</i>
Motives and Automorphic Forms <i>Oxford, UK</i>	<i>September 2015</i>
Workshop <i>Arithmetic of Euler systems</i> <i>Benasque, Spain</i>	<i>August 2015</i>
Pan-Asian Number Theory conference, in honour of John Coates' 70th birthday <i>Sanya, China</i>	<i>July 2015</i>
p -adic methods in Number Theory, in honor of Robert Coleman's 60th birthday <i>Berkeley, US</i>	<i>May 2015</i>

Automorphic forms, Shimura varieties, Galois representations and L-functions <i>MSRI, Berkeley, US</i>	<i>December 2014</i>
Southern California Number Theory Day <i>Irvine, US</i>	<i>November 2014</i>
ICM Satellite conference <i>Automorphic forms and arithmetic</i> <i>POSTECH, Korea</i>	<i>August 2014</i>
Connections for Women: New Geometric Methods in Number Theory <i>MSRI, Berkeley, US</i>	<i>August 2014</i>
Arithmetic algebraic number theory <i>Oberwolfach, Germany</i>	<i>July 2014</i>
p -adic variation in Number Theory, in honour of Glenn Stevens' 60th birthday <i>Boston, US</i>	<i>June 2014</i>
Prospects in Mathematics (<i>aimed at potential PhD students</i>) <i>Durham, UK</i>	<i>December 2013</i>
WINE Women in Numbers - Europe <i>CRM, Luminy, France</i>	<i>October 2013</i>
Effective methods for Darmon points <i>Centro de ciencias de Benasque, Spain</i>	<i>August 2013</i>
Modular forms, p -adic L functions, and Selmer groups <i>Oriahovitza, Bulgaria</i>	<i>July 2013</i>
Computations in p -adic Hodge theory <i>CRM, Luminy, France</i>	<i>April 2013</i>
Applications of Iwasawa algebras <i>Banff, Canada</i>	<i>March 2013</i>
London-Paris Number theory seminar <i>Jussieu, Paris</i>	<i>October 2012</i>
LMS Regional Meeting and Workshop on Iwasawa theory <i>Exeter, UK</i>	<i>October 2011</i>
<i>LMS Durham Research Symposium Automorphic forms and Galois representations</i> <i>Durham, UK</i>	<i>July 2011</i>
Recent developments in Galois module theory <i>CIRM, Marseille-Luminy, France</i>	<i>March 2011</i>
Prospects in Mathematics (<i>aimed at potential PhD students</i>) <i>Edinburgh, UK</i>	<i>December 2010</i>
ICM satellite conference <i>Galois representations in arithmetic geometry</i> <i>Goa, India</i>	<i>August 2010</i>
Iwasawa 2010 <i>Fields Institute, Toronto, Canada</i>	<i>July 2010</i>
Non-commutative algebra and non-commutative Iwasawa theory <i>ICMS, Edinburgh UK</i>	<i>September, 2009</i>
Iwasawa 2008 <i>Koster Irsee, Augsburg, Germany</i>	<i>July 2008</i>
Workshop <i>Galois Representations and Modular Forms</i> <i>Chennai Mathematical Institute, India</i>	<i>September 2007</i>
Arithmetic algebraic number theory <i>Oberwolfach, Germany</i>	<i>June 2007</i>

ACADEMIC VISITS	Centre Bernoulli, Lausanne, Switzerland	<i>September - December 2017</i>
	Institut des Hautes Etudes Scientifiques, France	<i>March 2017</i>
	Institute of Advanced Studies, Princeton	<i>February - March 2016</i>
	MSRI, Berkeley	<i>August - December 2014</i>
	Ben Gurion University, Israel <i>Guest of Professor Amnon Besser</i>	<i>April 2014</i>
	Universität Regensburg, Germany <i>Guest of Professor Guido Kings</i>	<i>November 2013</i>
	Universität Heidelberg, Germany <i>Guest of Professor Otmar Venjakob</i>	<i>September 2013</i>
	McGill University, Montréal, Canada <i>Guest of Professor Henri Darmon</i>	<i>May 2013</i>
	McGill University, Montréal, Canada <i>Guest of Professor Henri Darmon</i>	<i>April 2012</i>
	Northwestern University, Chicago, US <i>Guest of Professor Matthew Emerton</i>	<i>February - March 2011</i>
	Newton Institute, Cambridge, UK Programme <i>Non-Abelian Fundamental Groups in Arithmetic Geometry</i>	<i>October - December 2009</i>
	Tata Institute, Mumbai, India <i>Special Semester in Arithmetic Geometry</i>	<i>November 2008</i>
	University of Regensburg, Germany <i>Guest of Professor Guido Kings</i>	<i>April - June 2007</i>
RESEARCH SUPERVISION	Dr. Joseph Kramer-Miller, postdoctoral researcher	<i>since October 2016</i>
	Dr. Joaquin Rodriguez-Jacinto, postdoctoral researcher	<i>since October 2016</i>
	Tibor Backhausz, PhD student (joint supervision with Kevin Buzzard)	<i>since October 2016</i>
	Antonio Cauchi, PhD student	<i>since September 2015</i>
	Dr. Guhan Venkat Harikumar, postdoctoral researcher	<i>2015 - 2016</i>
TEACHING EXPERIENCE	University College London	<i>since 2012</i>
	Supervision of LSGNT projects: <ul style="list-style-type: none"> • Giada Grossi (current), <i>Complex regulator formulae for the Asai Euler system</i> • Raffael Singer (current), <i>Serre-Tate theory</i> • Antonio Cauchi, <i>Hida theory</i> • James Cann, <i>Modular curves as moduli spaces</i> • Antonio Cauchi, <i>Siegel units</i> • Enrica Mazzon, <i>Congruences between modular forms</i> • Tibor Backhausz, <i>(phi, Gamma)-modules for relative Lubin-Tate extensions</i> Supervision of MSci theses: <ul style="list-style-type: none"> • <i>Dilogarithms and the Borel regulator</i> • <i>Brauer groups</i> • <i>Lubin-Tate formal groups</i> 	

3rd year lecture course *Algebraic number theory*

University of Exeter

2009 - 2012

3rd year lecture course *Modern algebra*

4th year lecture course *Algebraic number theory*

Imperial College London

2006 - 2008

3rd and 4th year lecture course *Representation theory of finite groups*

Classes for 2nd year aerospace engineering students (linear algebra)

Supervision of 1st year essays

Classes for 3rd year engineering students (vector calculus)

University of Cambridge

2002 - 2005

Small group teaching of undergraduates (supervisions)

Other

Co-supervisor of Maria Marklove (PhD student at the University of Exeter) *June 2011 - September 2012*

Short lecture course on *p-adic Hodge theory*, Chennai *September 2008*

CONFERENCE
ORGANISATION

Organizer (together with Tim and Vladimir Dokchitser and David Loeffler) of the conference *Elliptic curves, Modular forms and Iwasawa theory* in honour of John Coates' 70th birthday, March 2015

Organizer of the *Number Theory Workshop at the BMC 2014*, Queen Mary University of London

Organizer (together with Samir Siksek, John Coates and Chris Wuthrich) of the *Workshop on Iwasawa Theory and Galois Representations*, Warwick, April 2013

Organizer (together with Nigel Byott and Andreas Langer) of the *LMS Regional Meeting and Workshop on Iwasawa theory* in Exeter, October 2011

Organizer of an international workshop *Geometric applications of p-adic Hodge theory*, University of Exeter, February 2009

OTHER
PROFESSIONAL
EXPERIENCE

Member-at-large of the Council of the London Mathematical Society, since November 2016

Internal examiner of the PhD thesis of Sam Derbyshire (Kings College London), January 2017

Internal examiner of the PhD thesis of Yukako Kezuka (University of Cambridge), December 2016

Co-organizer of the *London-Paris Number Theory Seminar*

Invited participant for an EPSRC workshop on Pure Mathematics, January 2016

Reviewer of an EPSRC First Grant application, July 2015

Member of the management team for the *London School of Geometry and Number Theory*, 2015

Member of the EPSRC Mathematics Prioritisation Panel, March 2014

Internal examiner of the PhD thesis of Daniel Ellam (University College London), July 2013

Speaker at the *Women in Mathematics Day* (University College London), June 2013

Internal examiner of the PhD thesis of Marcin Krzywkowski (University of Exeter), September 2012

Organizer of the London Number Theory Seminar, Lent term 2012/13 and 2013/14

Invitation from EPSRC to act as a reviewer for a First Grant application, January 2012

External examiner of the PhD thesis of Chern-Yang Lee (University of Cambridge), July 2010

I have also been invited to referee research papers for international journals including *Inventiones Mathematicae*, *Composito Math.* and *Commentarii Mathematici Helvetici*, as well as reviews for MathSciNet and Zentralblatt.

LANGUAGES

Native: German

Fluent: English, French

Diploma: Latin

Read: Italian, Spanish

last updated: 08/12/2016