

CURRICULUM VITAE - TOBY GEE

Name Toby Stephen Gee
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Date of birth 2 January 1980
Nationality British

Employment

08/2013 - Professor, Imperial College London
09/2011 - 07/2013 Senior Lecturer, Imperial College London
07/2010 - 08/2011 Assistant Professor, Northwestern University
07/2008 - 06/2010 Benjamin Peirce Lecturer, Harvard University
07/2007 - 06/2008 Postdoctoral Researcher, Northwestern University
08/2004 - 07/2007 EPSRC Postdoctoral Fellow, Imperial College London

Fellowships

09/2011 - 08/2013 Sloan Fellowship
07/2007 - 06/2010 Miller Fellowship, University of California, Berkeley (declined)
10/2004 - 09/2007 Title A Fellow, Trinity College, Cambridge

University education

10/2001 - 08/2004 PhD, Imperial College London (advisor: Prof. Kevin Buzzard)
09/2000 - 06/2001 Certificate of Advanced Study in Mathematics (Part III)
with distinction, Trinity College, Cambridge
09/1997 - 06/2000 BA in Mathematics at Trinity College, Cambridge
First class in all three years
Senior Wrangler (top first in Cambridge in final year)

Grants awarded

05/2016 - 04/2021 Royal Society Wolfson Merit Award £50,000
09/2014 - 08/2019 EPSRC grant (joint with Kevin Buzzard) £620,441
10/2012 - 09/2017 ERC starting grant (PI) €1,131,339
04/2012 - 03/2016 Marie Curie Career Integration Grant (PI) €100,000
12/2011 Funding for 3 AIM Workshops on "The p -adic Langlands program for non-split groups"
12/2011 Funding for Banff Workshop on "The p -adic Langlands program for non-split groups"
07/2011 - 06/2012 NSF Standard Grant (PI) \$45,445 (modification of grant below)
07/2011 - 06/2014 NSF Standard Grant (PI) \$242,160 (declined due to return to UK)
09/2011 - 08/2013 Sloan Fellowship (PI) \$50,000 (declined due to return to UK)
07/2008 - 06/2011 NSF Standard Grant (PI) \$97,856
08/2004 - 07/2007 EPSRC Postdoctoral Fellowship (PI) £105,602
09/2002 - 12/2002 Cecil King Travel Scholarship (London Mathematical Society) (PI) £5,000

Awards, prizes and distinctions

2013 Fellow of the American Mathematical Society
2012 Leverhulme Prize
2012 Whitehead Prize (London Mathematical Society)

Visiting positions

01/2013 Visiting Professor, Paris 13

Doctoral students

09/2016 - Andrea Dotto (joint with Kevin Buzzard)
09/2011 - 07/2015 Jack Shotton
09/2011 - 04/2013 Christian Johansson (joint with Kevin Buzzard)

Postdocs mentored

10/2016 - Carl Wang Erickson
10/2015 - Yiwen Ding
10/2015 - Stephane Bijakowski
10/2014 - 09/2016 James Newton
10/2014 - Olivier Taïbi
09/2013 - Rebecca Bellovin

Conferences organised

2013 Summer Graduate Workshop on New Geometric Techniques
in Number Theory, MSRI, Berkeley
2013 Workshop on the p -adic Langlands program for non-split groups, AIM, Palo Alto
2013 Conference on Higher Rank Automorphic Forms and L-functions, Warwick, UK
2012 Workshop on the p -adic Langlands program for non-split groups, Banff
2012 Conference on the p -adic Langlands program, Fields Institute, Toronto

Publications

1. T. Gee, A modularity lifting theorem for weight two Hilbert modular forms, **Math. Research Letters** **13** (2006), 805–811.
2. T. Gee, Companion forms over totally real fields II, **Duke Math Journal** **136** (2007), 275–284.
3. T. Gee, Companion forms over totally real fields, **Manuscripta Math.** **125** (2008), 1–41.
4. K. Buzzard and T. Gee, Explicit reduction modulo p of certain 2-dimensional crystalline representations, **IMRN** **12** (2009), 2303–2317.
5. T. Gee, The Sato–Tate conjecture for modular forms of weight 3, **Documenta Math** **14** (2009), 771–800.
6. T. Barnet-Lamb, T. Gee, and D. Geraghty, The Sato–Tate conjecture for Hilbert modular forms, **Journal of the A.M.S.** **24** (2011), 411–469.
7. T. Gee, Automorphic lifts of prescribed types, **Math. Annalen** **350** (2011), 107–144.
8. T. Gee, On the weights of mod p Hilbert modular forms, **Inventiones Math.** **184** (2011), 1–46.
9. T. Gee and D. Savitt, Serre weights for mod p Hilbert modular forms: the totally ramified case, **J. Reine Angew. Math** **660** (2011), 1–26.
10. T. Gee and D. Savitt, Serre weights for quaternion algebras, **Compositio Mathematica** **147** (2011), 1059–1086.
11. T. Gee and D. Geraghty, Companion forms for unitary and symplectic groups. **Duke Math. Journal** **161** (2012), Number 2, 247–303.
12. T. Gee, T. Liu, and D. Savitt, Crystalline extensions and the weight part of Serre’s conjecture. **Algebra and Number Theory** **6** (2012), 1537–1559.
13. T. Barnet-Lamb, T. Gee, and D. Geraghty, Congruences between Hilbert modular forms: constructing ordinary lifts. **Duke Math. Journal** **161** (2012), Number 8, 1521–1580.

14. T. Barnet-Lamb, T. Gee, D. Geraghty, and R. Taylor, Local-global compatibility for $l = p$, I. **Annales de Mathématiques de Toulouse** Volume 21, Number 1, 2012.
15. K. Buzzard and T. Gee, The conjectural connections between automorphic representations and Galois representations. **Proceedings of the LMS Durham Symposium 2011, CUP**.
16. T. Barnet-Lamb, T. Gee, D. Geraghty, and R. Taylor, Local-global compatibility for $l = p$, II. **Annales scientifiques de l'ENS** (4) 47 (2014), no. 1, 165–179.
17. F. Calegari and T. Gee, Irreducibility of automorphic Galois representations of $GL(n)$, n at most 5. **Annales de l'Institut Fourier** 63 (2013), no. 5, 1881–1912.
18. T. Gee and P. Kassaei, Companion forms in parallel weight one. **Compositio Mathematica** 149 (2013), no. 6, 903–913.
19. M. Emerton, T. Gee, and F. Herzig, Weight cycling and Serre-type conjectures for unitary groups. **Duke Math. Journal** 162 (2013), no. 9, 1649–1722.
20. K. Buzzard and T. Gee, Explicit reduction modulo p of certain 2-dimensional crystalline representations, II. **Bulletin of the LMS** 45 (2013), no. 4, 779–788.
21. M. Emerton and T. Gee, A Geometric Perspective on the Breuil–Mézard Conjecture. **Journal de l'Institut de Mathématiques de Jussieu** 3 (2014), no. 1, 183–223.
22. T. Barnet-Lamb, T. Gee, and D. Geraghty, Serre weights for rank two unitary groups. **Math. Annalen** 356 (2013), no. 4, 1551–1598.
23. T. Barnet-Lamb, T. Gee, and D. Geraghty, Congruences between Hilbert modular forms: constructing ordinary lifts, II. **Math. Research Letters** 20 (2013), no. 1, 67–72.
24. T. Gee and M. Kisin, The Breuil–Mézard conjecture for potentially Barsotti–Tate representations. **Forum of Math, Pi** 2 (2014), e1, 56 pp.
25. T. Barnet-Lamb, T. Gee, D. Geraghty, and R. Taylor, Potential automorphy and change of weight. **Annals of Mathematics** (2) 179 (2014), no. 2, 501–609.
26. T. Gee, T. Liu, and D. Savitt, The Buzzard–Diamond–Jarvis Conjecture for Unitary Groups. **Journal of the A.M.S.** 27 (2014), no. 2, 389–435.
27. M. Emerton and T. Gee, p -adic Hodge-theoretic properties of étale cohomology with mod p coefficients, and the cohomology of Shimura varieties. **Algebra and Number Theory** 9 (2015), no. 5, 1035–1088.
28. T. Gee and D. Geraghty, The Breuil–Mézard conjecture for quaternion algebras. **Annales de l'Institut Fourier** 64 (2015), no. 4, 1557–1575.
29. T. Gee, T. Liu, and D. Savitt, The weight part of Serre's conjecture for $GL(2)$. **Forum of Math, Pi** 3 (2015), e2, 52 pp.
30. M. Emerton, T. Gee and D. Savitt, Lattices in the cohomology of Shimura curves. **Inventiones** 200 (2015), no. 1, 1–96.
31. L. Dieulefait and T. Gee, Automorphy lifting for small l (Appendix B to Dieulefait's “Automorphy of $\text{Sym}^5(GL(2))$ and base change”) **J. Math. Pures et Appl.** (to appear).
32. K. Buzzard and T. Gee, Slopes of modular forms. **Proceedings of Simons Symposium on Families of Automorphic Forms and the Trace Formula** (to appear).
33. T. Barnet-Lamb, T. Gee, D. Geraghty, Serre weights for $U(n)$. **J. Reine Angew. Math.** (to appear).
34. A. Caraiani, M. Emerton, T. Gee, D. Geraghty, V. Paškūnas and S. W. Shin, Patching and the p -adic local Langlands correspondence **Cambridge Journal of Mathematics** (to appear).

Submitted: These papers may be found at <http://www2.imperial.ac.uk/~tsg/>

35. T. Gee, F. Herzig and D. Savitt, General Serre weight conjectures. (73 pages)
36. T. Gee, F. Herzig, T. Liu and D. Savitt, Potentially crystalline lifts of certain prescribed types. (22 pages)
37. A. Caraiani, M. Emerton, T. Gee, D. Geraghty, V. Paškūnas and S. W. Shin, Patching and the p -adic Langlands program for $GL_2(\mathbb{Q}_p)$. (47 pages)
38. M. Emerton and T. Gee, ‘Scheme-theoretic images’ of morphisms of stacks. (116 pages)
39. F. Calegari, M. Emerton, T. Gee and L. Mavrides, Explicit Serre weights for two-dimensional Galois representations. (15 pages)
40. T. Gee and J. Newton, Patching and the completed homology of locally symmetric spaces. (56 pages)

Service

2015 - present	Editor of <i>Selecta Math</i>
2013 - present	Editor of <i>Math. Annalen</i>
2013	Editorial Advisor for the <i>Bulletin</i> , <i>Journal</i> and <i>Proceedings</i> of the London Mathematical Society
2012 - present	Examiner for PhD theses at Cambridge University, King’s College London, and UEA
2004 - present	Referee for <i>Asterisque</i> , <i>Journal of the AMS</i> , <i>Inventiones</i> , <i>Math. Annalen</i> , <i>Duke Mathematical Journal</i> , <i>Compositio</i> , <i>Crelle</i> , <i>Journal of Algebraic Geometry</i> etc.

Selected talks

04/2016	University of Lyon Number Theory Seminar
04/2016	University of Chicago Number Theory Seminar
06/2015	Invited Speaker, “Arithmetic geometry, representation theory and applications”, CIRM, Luminy, France
06/2015	University of Oxford Number Theory seminar
11/2014	Colloquium, Queen Mary University
11/2014	University of Cambridge Number Theory seminar
11/2014	University of Warwick Number Theory seminar
06/2014	Inaugural lecture, Imperial College London
05/2014	Invited Speaker, “The cohomology of arithmetic groups and the Langlands program”, Barbados
04/2014	Morning Speaker, British Mathematical Colloquium, QMC London
01/2014	Invited Speaker, Simons Symposium on “Families of Automorphic Forms and the Trace Formula”, Puerto Rico
10/2013	University of London Number Theory Seminar
10/2013	University of Bristol Number Theory Seminar
07/2013	MSRI Summer School, Berkeley (4 lectures)
03/2013	Arizona Winter School, Tucson (4 lectures)
02/2013	Departmental seminar, University of Cambridge
01/2013	Seminaire Automorphes, Jussieu, Paris
01/2013	Orsay SAGA, Paris
01/2013	Invited Speaker, “Varieties de Shimura et Formes modulaires p -adiques”, Paris
01/2013	University of Lyon
10/2012	University of London Number Theory Seminar
09/2012	Invited Speaker, “Rational points on curves: a p -adic and computational perspective,” University of Oxford
07/2012	Invited Speaker, “Torsion in the homology of arithmetic groups,” Banff International Research Station
05/2012	University of East Anglia Pure Mathematics seminar
04/2012	Invited Speaker, “The p -adic Langlands program: recent developments and applications,” Fields Institute, Toronto
03/2012	Invited Speaker, “Cohomology of Shimura varieties: arithmetic aspects and the construction of Galois representations,” Fields Institute, Toronto
03/2012	University of Cambridge Number Theory seminar

01/2012 University of Oxford Number Theory seminar
 01/2012 Oberseminar, University of Essen, Germany
 01/2012 Paris–Tokyo Number Theory Seminar, IHES, Paris
 12/2011 University of Warwick Number Theory Seminar
 11/2011 University of London Number Theory Seminar
 07/2011 Invited Speaker (2 lectures), Automorphic forms and Galois representations,
 LMS Durham Symposium, 2011
 06/2011 Invited Speaker, Double Affine Hecke Algebras, the Langlands Program, and theoretical physics,
 CIRM, Luminy, France
 06/2011 Invited Speaker, Conference on “Explicit p -adic Hodge Theory”, Lyon, France
 04/2011 Colloquium, Columbia University
 04/2011 Invited Speaker, “Oliver Atkin Memorial Workshop”, University of Illinois Chicago
 03/2011 Invited Speaker, “Workshop on Galois Representations and Automorphic Forms”,
 Institute for Advanced Study, Princeton
 01/2011 Invited Speaker (4 lectures), “Winter school on Serre’s Conjecture,” POSTECH, South Korea
 12/2010 University of Wisconsin, Madison Number Theory Seminar
 10/2010 University of Chicago Number Theory Seminar
 10/2010 Northwestern University Number Theory Seminar
 02/2010 Stanford University Number Theory Seminar
 02/2010 Cambridge University Number Theory Seminar
 02/2010 University of London Number Theory Seminar
 01/2010 Invited Speaker (3 lectures), Fontaine Trimester, IHP, Paris
 12/2009 Colloquium, Northwestern University
 12/2009 MIT Number Theory Seminar
 12/2009 Colloquium, Boston College
 11/2009 Invited Speaker, “Workshop on Arithmetic,” Kanazawa, Japan
 07/2009 Invited Speaker, “Workshop on Automorphic Representations, Geometry, and Arithmetic,”
 National Taiwan University, Taipei
 11/2008 Invited Speaker, “Workshop on Shimura Varieties, Automorphic Representations and
 Related Topics,” Kyoto University
 10/2008 Colloquium, University of Arizona, Tucson
 10/2008 Harvard University Number Theory Seminar
 08/2008 Invited Speaker, “The stable trace formula, automorphic forms, and Galois representations,”
 Banff International Research Station
 04/2008 Princeton University Number Theory Seminar
 11/2007 University of Wisconsin, Madison Number Theory Seminar
 04/2008 University of Illinois, Chicago Number Theory Seminar
 10/2007 Northwestern University Number Theory Seminar
 06/2007 IHES, Paris
 01/2007 Orsay SAGA, Paris
 11/2006 Invited speaker, “Hot Topics: Modularity for $GL(2)$ and Beyond,” MSRI, Berkeley
 11/2006 Joint London–Paris Number Theory seminar, Paris
 02/2006 AIM Workshop on “ p -adic representations, modularity, and beyond,” Palo Alto
 11/2005 University of Paris Number Theory seminar
 10/2005 University of London Number Theory seminar
 07/2005 Invited speaker, Conference on Galois representations, Strasbourg
 05/2005 University of Chicago Algebraic Geometry seminar
 11/2004 University of London Number Theory seminar
 11/2004 University of Oxford Number Theory seminar
 11/2004 University of Exeter Pure Maths seminar
 10/2004 Harvard University Number Theory seminar
 10/2004 University of Cambridge Number Theory seminar