

## CURRICULUM VITAE - TOBY GEE

**Name** Toby Stephen Gee  
**Address** Department of Mathematics, Imperial College London,  
180 Queen's Gate, London SW7 2AZ, UK  
**Email** toby.gee@imperial.ac.uk  
**Homepage** <http://www2.imperial.ac.uk/~tsg>  
**Date of birth** 2 January 1980  
**Nationality** British

### Employment

09/2011 - 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

12/2011 Funding for AIM Workshop 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

2002 Cecil King Travel Scholarship (London Mathematical Society)  
2000 Ver Hayden de Lancey Prize (Trinity College, Cambridge)  
2000 Rouse Ball Essay Prize (Trinity College, Cambridge)  
1999 Yeats Essay Prize (Trinity College, Cambridge)  
1998 Senior Scholar (Trinity College, Cambridge)  
1997 Bronze Medal, International Mathematical Olympiad  
1997 Perfect Score, British Mathematical Olympiad (both rounds)  
1996 Silver Medal, International Mathematical Olympiad

### Teaching and Supervising experience

09/2011 - Supervising PhD thesis by Jack Shotton (jointly with Kevin Buzzard)  
09/2011 - Supervising PhD thesis by Christian Johansson (jointly with Kevin Buzzard)  
09/2011 - 06/2012 Supervising undergraduate senior thesis by Alexander Kergozou, Imperial College London  
09/2011 - 12/2011 Teaching 33 lecture undergraduate course on elliptic curves, Imperial College London  
09/2010 - 03/2011 Teaching three courses - one undergraduate course of integral calculus

	and two graduate courses in algebra, Northwestern University
09/2009 - 05/2010	Teaching three courses - one undergraduate course of multivariable calculus, one graduate course in commutative algebra, and one advanced graduate course on the $p$ -adic Langlands correspondence, Harvard University
09/2008 - 05/2009	Teaching three courses - two undergraduate courses of multivariable calculus, and one graduate course in global class field theory; Supervisor of undergraduate senior thesis by Gil Moss, Harvard University
01/2008 - 05/2008	Supervisor of Honors Thesis by Nicolai Wohns, Northwestern University
01/2007 - 03/2007	Lecturer, “Algebraic Number Theory,” 33 lecture course for final year undergraduates, Imperial College London
01/2006 - 03/2006	Lecturer, “Algebraic Number Theory,” 33 lecture course for final year undergraduates, Imperial College London
07/2005 - 08/2005	Supervisor of summer research project by Graham Sills, Trinity College, Cambridge
10/2004 - 09/2005	Supervisor of MSc project by Nahid Walji, Imperial College London
01/2005 - 03/2005	Lecturer, “Algebraic Number Theory,” 33 lecture course for final year undergraduates, Imperial College London
10/2001 - 05/2007	Supervisor of pairs of undergraduates, all pure mathematics courses for first and second year undergraduates, and third year algebraic number theory, Trinity College, Cambridge

### Administration

07/2013	Organiser, workshop on the $p$ -adic Langlands program for non-split groups, AIM, Palo Alto
05/2013	Organiser, conference on Higher Rank Automorphic Forms and L-functions, Warwick, UK
08/2012	Organiser, workshop on the $p$ -adic Langlands program for non-split groups, Banff
04/2012	Organiser, conference on the $p$ -adic Langlands program, Fields Institute, Toronto
2010 - 2011	Graduate committee, Northwestern University mathematics department
2009 - 2010	Colloquium committee, Harvard University mathematics department
2008 - 2009	Graduate qualifying exam committee, Harvard University mathematics department
2005	Organiser, study group on Khare’s proof of Serre’s conjecture in level one
2004 - 2006	Organiser, London Number Theory Seminar
2004	Organiser, study group on the Taylor-Wiles method

### 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** **147** (2011), 1059-1086.
11. T. Gee and D. Geraghty, Companion forms for unitary and symplectic groups. To appear in **Duke Math. Journal**.
12. T. Gee, T. Liu, and D. Savitt, Crystalline extensions and the weight part of Serre’s conjecture. To appear in **Algebra and Number Theory**.

13. T. Barnet-Lamb, T. Gee, and D. Geraghty, Congruences between Hilbert modular forms: constructing ordinary lifts. To appear in **Duke Math. Journal**.
14. T. Barnet-Lamb, T. Gee, D. Geraghty, and R. Taylor, Local-global compatibility for  $l = p$ , I. To appear in **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. To appear in **Proceedings of the LMS Durham Symposium 2011**.

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

16. T. Barnet-Lamb, T. Gee, D. Geraghty, and R. Taylor, Potential automorphy and change of weight.
17. T. Barnet-Lamb, T. Gee, D. Geraghty, and R. Taylor, Local-global compatibility for  $l = p$ , II.
18. F. Calegari and T. Gee, Irreducibility of automorphic Galois representations of  $GL(n)$ ,  $n$  at most 5.
19. T. Barnet-Lamb, T. Gee, and D. Geraghty, Serre weights for rank two unitary groups.
20. M. Emerton, T. Gee, and F. Herzig, Weight cycling and Serre-type conjectures for unitary groups.
21. M. Emerton and T. Gee, A Geometric Perspective on the Breuil–Mézard Conjecture.
22. T. Gee, T. Liu, and D. Savitt, The Buzzard–Diamond–Jarvis Conjecture for Unitary Groups.
23. M. Emerton and T. Gee,  $p$ -adic Hodge-theoretic properties of étale cohomology with mod  $p$  coefficients, and the cohomology of Shimura varieties.
24. K. Buzzard and T. Gee, Explicit reduction modulo  $p$  of certain 2-dimensional crystalline representations, II.

### Selected talks

- |         |  |
|---------|--|
| 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 University 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  
 02/2004 University of London Number Theory seminar  
 12/2002 Harvard University Modular Curves seminar

### Service

2004–present Referee for Asterisque, Journal of the AMS, Inventiones, Math. Annalen, Duke Mathematical Journal, Journal of Number Theory, Journal of the LMS, Acta Arithmetica.