Tasho Kaletha

Department of Mathematics, University of Michigan
530 Church St, Ann Arbor, MI 48109

kaletha@umich.edu
http://www-personal.umich.edu/~kaletha/

(updated Oct. 2021)

Employment

2021-   *University of Michigan,* Professor.

2016-2021   *University of Michigan,* Associate Professor.

2014-2016   *Harvard University,* Benjamin Peirce Fellow.

2013-2015   *Princeton University*, Assistant Professor, (on leave 2014-2015).

2010-2013   *Princeton University/Institute for Advanced Study*, Veblen Research Instructor.

Education

2010   The University of Chicago, Ph.D. in Mathematics.
Advisor: *Robert Kottwitz*
Thesis: *Endoscopic character identities for depth-zero supercuspidal L-packets.*

2005   University of Bonn, Diplom in Mathematics.
Advisor: *Günter Harder*
Thesis: *Comparison between the Selberg trace formula and the theorem of Riemann-Roch.*

Research Interests

- Harmonic analysis and representation theory of locally compact groups
- The Langlands program, endoscopy, the stable Arthur-Selberg trace formula
- Galois cohomology

Honors, Awards, Grants

- Invited Speaker, ICM 2022, St. Petersburg

- John Dewey Award for undergraduate education, University of Michigan

- Simons Fellowship 2020-2021

- IAS Von-Neumann-Fellowship Fall 2020

- RTG: Number Theory and Representation Theory at the University of Michigan
  DMS-1840234, 2019-2024, co-PI, $2,500,000

- NSF grant DMS-1801687, 2018-2021, PI, $215,000

- UM Associate Professor Support Fund, 2018-2021, PI, $30,000

- AIM SQUARE 2018-2020

- Sloan Research Fellowship, 2015-2019, $50,000

- Certificate of Teaching Excellence, Harvard University 2015

- NSF grant DMS-161489, 2012-2016, PI, $176,570

- Joint fellowship (Gegenstipendium) by Princeton University and DAAD – 2003-2004

- Scholarship by the German National Academic Foundation (Studienstiftung) – 1999-2005

Service

- Co-organizer, with Yiannis Sakellaridis, of the Automorphic Project online seminar.
- University of Michigan
    - REU Committee
    - Executive Committee
    - Math Club
    - Language Exam Committee
    - Honors Committee
    - Library Committee
- Harvard University
    - Co-organizer of number theory seminar
    - Organizer of basic notions seminar
    - Graduate Admissions Committee
- Princeton University
    - Co-organizer of Princeton/IAS number theory seminar
    - Junior adviser
- Reviewer of grant proposals (NSF, ERC, NWO, NSERC)
- Refereeing and quick opinions (Algebra and Number Theory, American Journal of Math., Annals of Math, Annales Sci. ENS, Crelle, Compositio, Duke, GAFA, Pub. Math. IHES, International Journal of Number Theory, IMRN, Inventiones, J. Algebra, JAMS, JEMS, Journal de l'École polytechnique, Math. Ann, Memoirs AMS, Proceedings LMS, Representation Theory, Transactions AMS)

Supervision

- Post-docs supervised (Michigan):
    - Shuyang Cheng (next position: Postdoctoral Research Fellow, Univ. Michigan)
    - Michal Zydor (next position: Citibank, Poland)
    - Serin Hong
    - Alexander Bertoloni Meli

      o Partrick Daniels

- Graduate students (Michigan):
    - David Schwein (next position, post-doc at University of Cambridge)
    - Peter Dillery
    - Masao Oi (visiting Winter 2018; next position: post-doc at Kyoto Univ.)

- Undergraduate students
    - REU on Representations of division algebras over non-archimedean local fields (Michigan, summer 2021, joint with K. Koziol)
    - REU on Supercuspidal parameters and their centralizers (Michigan, summer 2018)
    - Reading project on algebraic groups (Michigan, summer 2017)
    - Reading project on topology (Harvard, summer 2015)
    - Junior paper supervision (Princeton, spring 2014)
    - Senior thesis supervision (Princeton, spring 2014)
    - Reading projects on topology and differential geometry (Princeton, summer 2013)
    - Summer advising on algebraic groups (Princeton, summer 2011)

Visiting positions

Spring 2020	*Université Paris-Sud,* Paris-Orsay *(postponed due to covid)*
Winter 2020	*University of California*, Berkeley *(postponed due to covid)*
Fall 2020	*Institute for Advanced Study,* Princeton *(postponed due to covid)*
06-07/2020	*Hausdorff Institute,* Bonn, *(postponed due to covid)*
06/2017	*Université Paris-Sud,* Paris-Orsay
06/2013	*MIT,* Boston
06/2012	*Institut de mathématiques de Jussieu,* Paris
07/2008	*The Max-Planck-Institute for Mathematics*, Bonn

Teaching experience

- Michigan: Lie Algebras 612, Honors Algebra 494, Lie Groups 498, Advanced Calculus 451, Jacquet-Langlands Theory 678, Probability Theory 525, Bruhat-Tits Theory 715
- Harvard: Honors Linear Algebra 25a, Honors Analysis 25b, Graduate Topics Course on the Arthur-Langlands conjectures 267
- Princeton: Calculus 130, Equations and numbers 214, Honors Analysis 215, Honors Linear Algebra 217, Junior Seminar Lie Groups
- Chicago: Calculus 103
- Bonn: Teaching Assistant for Analysis and Algebra

Publications and preprints

1. Tasho Kaletha, Gopal Prasad. "A new approach to Bruhat—Tits theory", to be published by Cambridge University Press, 680pp.

2. Jessica Fintzen, Tasho Kaletha, and Loren Spice. "A twisted Yu construction, Harish-Chandra characters, and endoscopy", preprint, 45pp.

3. Tasho Kaletha. "Lectures on the stable trace formula, with emphasis on SL_2", accepted for publication at the Lecture Notes Series, Institute for Mathematical Sciences, National University of Singapore, 73pp.

4. Tasho Kaletha. "Supercuspidal L-packets", submitted, 83pp.

5. Tasho Kaletha. "On L-embeddings and double covers of tori over local fields", submitted, 49pp.

6. Tasho Kaletha and Olivier Taïbi. "Global rigid inner forms vs isocrystals", submitted, 54pp.

7. Khalid Bou-Rabee, Tasho Kaletha, and Daniel Studenmund. "Commensurability growths of algebraic groups", Math. Z. 294.3-4 (2020), pp. 1749–1757.

8. Tasho Kaletha and Jared Weinstein. "On the Kottwitz conjecture for moduli spaces of local shtukas", submitted, 109pp.

9. Tasho Kaletha. "Regular supercuspidal representations", J. Amer. Math. Soc. 32.4 (2019), pp. 1071–1170.

10. Tasho Kaletha. "Rigid inner forms vs isocrystals", J. Eur. Math. Soc. (JEMS) 20.1 (2018), pp. 61–101.

11. Tasho Kaletha. "Global rigid inner forms and multiplicities of discrete automorphic representations", Invent. Math. 213.1 (2018), pp. 271–369.

12. Tasho Kaletha. "The local Langlands conjectures for non-quasi-split groups", Families of automorphic forms and the trace formula. Simons Symp. Springer, 2016, pp. 217–257.

13. Tasho Kaletha, Alberto Minguez, Sug Woo Shin, and Paul-James White. "Endoscopic Classification of Representations: Inner Forms of Unitary Groups", preprint, 220pp.

14. Jack A. Thorne. "Arithmetic invariant theory and 2-descent for plane quartic curves", Algebra Number Theory 10.7 (2016). With an appendix by Tasho Kaletha, pp. 1373–1413.

15. Tasho Kaletha. "Rigid inner forms of real and p-adic groups", Ann. of Math. (2) 184.2 (2016), pp. 559–632.

16. Tasho Kaletha. "Epipelagic L-packets and rectifying characters", Invent. Math. 202.1 (2015), pp. 1–89.

17. Tasho Kaletha. "Genericity and contragredience in the local Langlands correspondence", Algebra Number Theory 7.10 (2013), pp. 2447–2474.

18. Tasho Kaletha. "Simple wild L-packets", J. Inst. Math. Jussieu 12.1 (2013), pp. 43–75.

19. Tasho Kaletha. "Supercuspidal L-packets via isocrystals", Amer. J. Math. 136.1 (2014), pp. 203–239.

20. Tasho Kaletha. "Genericity and contragredience in the local Langlands correspondence", Algebra Number Theory 7.10 (2013), pp. 2447–2474.

21. Khalid Bou-Rabee and Tasho Kaletha. "Quantifying residual finiteness of arithmetic groups", Compos. Math. 148.3 (2012), pp. 907–920.

22. Tasho Kaletha. "Endoscopic character identities for depth-zero supercuspidal L-packets", Duke Math. J. 158.2 (2011), pp. 161–224.

23. Tasho Kaletha. "Decomposition of splitting invariants in split real groups", Canad. J. Math. 63.5 (2011), pp. 1083–1106.

Conference organization

- Mini-conference "Characters of supercuspidal representations of p-adic groups", Harvard, Feb 2016.
- Conference "Trace Formula and Beyond Endoscopy", with A. Altug, J. Arthur, W. Casselman, AIM, December 2017.
- Conference "Functoriality and Automorphic Periods", with R. Beuzart-Plessis, Y. Sakellaridis, Nysiros, Greece, July 2020 *(postponed due to covid)*.
- Conference "Automorphic Forms, Geometry, and Arithmetic" with G. Chenevier, S. Kudla, S. Morel, Oberwolfach, Germany, August 2021.
- Conference "Basic Functions, Orbital Integrals, and Beyond Endoscopy", with J. Arthur, J. Gordon, Banff, Canada, November 2021.
- Summer school "Langlands functoriality conjecture", with W.-T. Gan, P.-H. Chaudouard, B.-C. Ngo, Y. Sakellaridis, IHES, France, July 2022.

Invited talks and lecture series

10/2021	*"Representation-theoretic part of HKW"* Rampage Online Seminar
10/2021	*"Characterization and construction of the local Langlands correspondence for supercuspidal parameters"* Johns Hopkins Number Theory Seminar
05/2021	"*A local Langlands conjecture for disconnected groups",* Conference on Relative Aspects of the Langlands Program at CIRM Luminy
04/2021	"*On double covers of tori and the local Langlands correspondence*" Virtual Workshop on Representation Theory and Geometry, Institute for Advanced Study
03/2021	"*On double covers of tori*" AMS Special Session on Recent Developments in Automorphic Representations, Brown University
12/2020	"*On the local Langlands conjectures for disconnected groups*" Maryland Representation Theory Seminar
10/2020	"*An explicit supercuspidal local Langlands correspondence*" Princeton University/Institute for Advanced Study Number Theory Seminar

07/2020	Conference on Local Langlands and p-adic methods, Hausdorff Institute Bonn *(postponed due to covid)*
05/2020	Lecture series on "*The local Langlands correspondence for supercuspidal representations*" Automorphic Fest 2020, Johns Hopkins University *(postponed due to covid)*
05/2020	"*A twisted Yu construction and Harish-Chandra characters*" Cross Atlantic Representation Theory and Other topics ONline (CARTOON) conference
04/2019	"*Supercuspidal L-packets*" Number Theory Seminar, Ohio State University
01/2019	"*Supercuspidal L-packets*" Conference on Endoscopy and Beyond, IMS NUS, Singapore
12/2018	Lecture series on "*Endoscopy and the Stable Trace Formula*" Special Program on Endoscopy and Beyond, IMS NUS, Singapore
11/2018	"*Harish-Chandra characters and the local Langlands correspondence*" Sixth Abel Conference: A Mathematical Celebration of Robert P. Langlands, University of Minnesota
10/2018	"*On some Galois gerbes and applications*" Conference on Arithmetic Algebraic Geometry on the occasion of Michael Rapoport's 70th birthday, Bonn, Germany
06/2018	Lecture series on "*The local Langlands correspondence*", Special Program on Groupes algébriques et géométrisation du programme de Langlands, Lyon, France
05/2018	"*Supercuspidal L-packets*" Conference Groupes algébriques et géométrisation du programme de Langlands, Lyon, France
03/2018	"*On the automorphic spectrum of non-quasi-split groups*" Conference on Arithmetic and Automorphic Forms on the occasion of Günter Harder's 80th birthday, Bonn, Germany
03/2018	"*Supercuspidal L-packets*" Workshop on Representation Theory and Analysis on Locally Symmetric Spaces, IAS, Princeton
11/2017	"*Supercuspidal L-packets*" Representation theory Seminar, University of Maryland
11/2017	"*Supercuspidal L-packets*" Number Theory Seminar, UCLA
11/2017	"*Supercuspidal L-packets*" Number Theory Seminar, Caltech
06/2017	Lecture series on "*The refined Arthur-Langlands conjectures*", Département de Mathématiques d'Orsay, Paris, France
06/2017	"*Supercuspidal L-packets*" Colloquium, Département de Mathématiques d'Orsay, Paris, France
06/2017	"*Supercuspidal L-packets*" Seminar, Institute de Mathematiques de Jussieu, Paris, France
05/2017	"*Supercuspidal L-packets*" Workshop on Harmonic Analysis and the Trace Formula, Oberwolfach, Germany
04/2017	"*Regular supercuspidal representations*"

	Number Theory Seminar, Duke University
03/2017	*"Regular supercuspidal representations"* Southern California Number Theory Day, UCSD
02/2017	*"Regular supercuspidal representations"* Joint Number Theory Seminar, Columbia University
10/2016	*"Regular supercuspidal representations"* Number Theory Seminar, Northwestern University
10/2016	*"Regular supercuspidal representations"* Number Theory Seminar, University of Chicago
10/2016	*"Regular supercuspidal representations"* The 2016 Paul J. Sally, Jr. Midwest Representation Theory Conference, in honor of Philip Kutzko's 70th Birthday, University of Iowa
09/2016	*"Regular supercuspidal representations"* Workshop on Beyond Endoscopy in honor of Robert Langlands' 80th Birthday, IAS
05/2016	*"Regular supercuspidal representations"* Conference on Relative Trace Formula, Periods, L-Functions and Harmonic Analysis, Luminy, France
03/2016	*"On the local and global Arthur-Langlands conjectures"* Number Theory Seminar, Harvard University
02/2016	*"Regular supercuspidal representations"* Workshop on characters of supercuspidal representations of p-adic groups, Harvard University
12/2015	*"On the endoscopic classification of representations of classical groups"* Workshop on Automorphic Kernel Functions, AIM
10/2015	*"On the automorphic spectrum of non-quasi-split groups"* Number Theory Seminar, Boston University
05/2015	*"On the automorphic spectrum of non-quasi-split groups"* Beyond Endoscopy Workshop, Purdue University
04/2015	*"On the automorphic spectrum of non-quasi-split groups"* Number theory seminar, Johns Hopkins University
11/2014	"*Some recent results in the Langlands program"* Group, Lie and Number Theory Seminar, University of Michigan
06/2014	"*Internal structure of L-packets*" Workshop on "The future of trace formulas", Banff, Canada
05/2014	"*Rigid inner forms and endoscopy*" Number Theory and Representation Theory Seminar, Stanford University
02/2014	"*Rigid inner forms and endoscopy*" Boston College/MIT joint number theory seminar
01/2014	"*Rigid inner forms and endoscopy*" Simons symposium on "Families of Automorphic Forms and the Trace Formula"
01/2014	"*Rigid inner forms and endoscopy*" Special session on recent progress in the Langlands program, JMM Baltimore
07/2013	"*Rigid inner forms for real and p-adic groups*" Atlas workshop on representations of reductive groups, Salt Lake City

06/2013	"*Rigid inner forms*" Special lectures, University of Michigan
04/2013	"*Epipelagic L-packets and rectifying characters*" Algebra and Number Theory Day, Johns Hopkins University, Baltimore
11/2012	Colloquium, Rutgers University at Newark
11/2012	Colloquium, University of Minnesota
11/2012	"*Epipelagic L-packets and rectifying characters*" Automorphic forms and number theory seminar, University of Minnesota
10/2012	"*Epipelagic L-packets and rectifying characters*" Number theory seminar, Harvard University
09/2012	"*Epipelagic L-packets and rectifying characters*" Automorphic forms seminar, Purdue University
07/2012	"*Epipelagic L-packets and rectifying characters*" Workshop on the arithmetic geometry of Shimura varieties, representation theory, and related topics, Hokkaido University, Sapporo
07/2012	"*Introduction to the local Langlands conjectures and endoscopy*" Workshop on the arithmetic geometry of Shimura varieties, representation theory, and related topics, Hokkaido University, Sapporo
07/2012	"*Epipelagic L-packets and rectifying characters*" Number theory seminar, Kyoto University, Kyoto
06/2012	"*Epipelagic L-packets and rectifying characters*" Workshop, Institut de mathématiques de Jussieu, Paris
05/2012	"*Genericity and contragredience in the local Langlands corrrespondence*" Number Theory and Representation Theory Seminar, Stanford University
11/2011	"*Epipelagic L-packets*" Group, Lie and Number Theory Seminar, University of Michigan
11/2011	"*Epipelagic L-packets*" Lie Groups and Representation Theory Seminar, University of Maryland
06/2011	"*Supercuspidal L-packets*" Workshop on L-packets, Banff, Canada
05/2011	"*Simple wild L-packets*" Number Theory Seminar, Harvard University
05/2011	"*Simple wild L-packets*" Number Theory/Representation Theory Seminar, Boston College
03/2011	"*Supercuspidal L-packets*" Workshop on Galois representations and automorphic forms, IAS, Princeton
12/2010	"*The Langlands correspondence and endoscopy for p-adic groups*" CMS Winter Meetings, Session "p-adic groups, automorphic forms and geometry"
12/2010	"*The Langlands correspondence and endoscopy for p-adic groups*" Number Theory Seminar, UBC/SFU
11/2010	"*The Langlands correspondence and endoscopy for p-adic groups*" Number Theory Seminar, Princeton University
10/2010	"*Quantifying residual finiteness of arithmetic groups*"

Topology Seminar, University of Michigan

10/2010 "*Supercuspidal L-packets via isocrystals*"
Number Theory Seminar, University of Chicago

05/2010 "*Endoscopic transfer of depth-zero supercuspidal L-packets*"
Automorphic Forms and Representation Theory Seminar, Purdue University

03/2010 "*Endoscopic character identities for depth-zero supercuspidal L-packets*"
Lie Groups and Representation Theory Seminar, University of Maryland

02/2010 "*Depth-zero local Langlands correspondence and endoscopic transfer*"
Lie Groups Seminar, MIT

10/2009 "*Depth-zero local Langlands correspondence and endoscopic transfer*"
Geometry/Physics Seminar, Northwestern University

10/2009 "*Endoscopic character identities for depth-zero supercuspidal L-packets*"
Group, Lie and Number Theory Seminar, University of Michigan

11/2008 "*Toward a stable topological trace formula*"
Group, Lie and Number Theory Seminar, University of Michigan

11/2008 "*On Endoscopy*"
Lecture series, University of Michigan

05/2008 "*The stabilization of the trace formula and the fundamental lemma*"
Workshop on rigid geometry and motivic integration, ICTS, Edinburgh, UK

02/2008 "*Introduction to the fundamental lemma*"
Geometric Langlands Seminar, University of Chicago

Languages

German, English, Bulgarian – fluent; Russian – intermediate; French – technical reading