

# Stanford

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## Daniel Bump

Professor of Mathematics

### Bio

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#### ACADEMIC APPOINTMENTS

- Professor, Mathematics

#### ADMINISTRATIVE APPOINTMENTS

- Assistant Professor, Stanford University, (1986-1990)
- Lecturer, The University of Texas at Austin, (1983-1985)
- Associate Professor, Stanford University, (1990-1995)
- Professor, Stanford University, (1995- present)
- Visiting Assistant Professor, The University of Rochester, (1984-1984)
- Visitor, Sonderforschungsbereich 170, Göttingen, (1986-1986)
- Visitor, The Institute for Advanced Studies at the Hebrew University of Jerusalem, (1988-1988)
- Visiting Professor, Reed College, (2007-2007)

#### HONORS AND AWARDS

- Centennial Research Fellow, The American Mathematical Society (1991-1993)
- Vollum Award, Reed College (2006)
- Fellow of the American Mathematical Society, American Mathematical Society (2015)

#### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, The Institute for Advanced Study (Princeton) (1985 - 1986)
- Member, Mathematical Sciences Research Institute (1994 - 1995)
- Reviewer, Mathematical Reviews
- Member Organizing Committee, Special Year in Automorphic Forms, MSRI (1994 - 1995)
- Member, Organizing Committee of the workshop, "New Vistas in Automorphic Forms," MSRI (1995 - 1995)
- Co-organizer, AMS meeting in San Francisco (2000 - 2000)
- Member, Organizing committee of the Bretton Woods Conference on Multiple Dirichlet Series (2005 - 2005)
- Member, Organizing committee of the Stanford Conference on Multiple Dirichlet Series (2006 - 2006)
- Advisor to the organizers, Edinburgh workshop on Multiple Dirichlet Series (2008 - 2008)
- Member, Organizing committee of the second Stanford Conference on Multiple Dirichlet Series (2009 - 2009)
- Member, Organizing committee of the workshop "Whittaker Functions, Crystal Bases, and Quantum Groups," Banff (2010 - 2010)

## PROFESSIONAL EDUCATION

- PhD, The University of Chicago (1982)
- MS, The University of Chicago (1975)
- BA, Reed College (1974)

## Teaching

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### COURSES

#### 2025-26

- Groups and Rings: MATH 120 (Aut)
- Modules and Group Representations: MATH 122 (Spr)
- Topics in Representation Theory: MATH 263B (Win)

#### 2024-25

- Lie Theory: MATH 210C (Spr)
- Topics in Representation Theory: MATH 263C (Spr)

#### 2023-24

- Galois Theory: MATH 121 (Win)
- Lie Theory: MATH 210C (Spr)
- Topics in Representation Theory: MATH 263A (Aut)

#### 2022-23

- Groups and Rings: MATH 120 (Spr)
- Modern Algebra II: MATH 210B (Win)
- Topics in Representation Theory: MATH 263A (Aut)

## STANFORD ADVISEES

### Doctoral Dissertation Advisor (AC)

Talia Blum, Yingzi Yang

## Publications

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### PUBLICATIONS

- **Casselman's Basis of Iwahori Vectors and Kazhdan-Lusztig Polynomials** *CANADIAN JOURNAL OF MATHEMATICS-JOURNAL CANADIEN DE MATHÉMATIQUES*  
Bump, D., Nakasuji, M.  
2019; 71 (6): 1351–66
- **A Yang-Baxter equation for metaplectic ice** *COMMUNICATIONS IN NUMBER THEORY AND PHYSICS*  
Brubaker, B., Buciumas, V., Bump, D., Gray, N.  
2019; 13 (1): 101–48
- **Crystal Bases, Representations and combinatorics**  
Bump, D., Schilling, A.  
World Scientific.2017
- **Useful Bounds on the Extreme Eigenvalues and Vectors of Matrices for Harper's Operators** *LARGE TRUNCATED TOEPLITZ MATRICES, TOEPLITZ OPERATORS, AND RELATED TOPICS: THE ALBRECHT BOTTCHEER ANNIVERSARY VOLUME*

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- Bump, D., Diaconis, P., Hicks, A., Miclo, L., Widom, H.  
edited by Bini, D. A., Ehrhardt, T., Karlovich, A. Y., Spitkovsky  
2017; 259: 235–65
- **Hecke Modules from Metaplectic Ice** *Selecta Mathematica*  
Brubaker, B., Buciumas, V., Bump, D.  
2017
  - **Matrix coefficients and Iwahori-Hecke algebra modules** *ADVANCES IN MATHEMATICS*  
Brubaker, B., Bump, D., Friedberg, S.  
2016; 299: 247-271
  - **Whittaker functions and Demazure operators** *JOURNAL OF NUMBER THEORY*  
Brubaker, B., Bump, D., Licata, A.  
2015; 146: 41-68
  - **SCHUBERT EISENSTEIN SERIES** *AMERICAN JOURNAL OF MATHEMATICS*  
Bump, D., Choie, Y.  
2014; 136 (6): 1581-1608
  - **Lie Groups** *Springer GTM*  
Bump, D.  
Springer.2013; 225
  - **UNIQUE FUNCTIONALS AND REPRESENTATIONS OF HECKE ALGEBRAS** *PACIFIC JOURNAL OF MATHEMATICS*  
Brubaker, B., Bump, D., Friedberg, S.  
2012; 260 (2): 381-394
  - **Multiple Dirichlet Series, L-functions and Automorphic Forms** *Birkhäuser Progress in Math*  
Bump, D.  
edited by Bump, D., Friedberg, S., Goldfeld, D.  
Birkhäuser.2012; 300
  - **Schur Polynomials and The Yang-Baxter Equation** *COMMUNICATIONS IN MATHEMATICAL PHYSICS*  
Brubaker, B., Bump, D., Friedberg, S.  
2011; 308 (2): 281-301
  - **Casselman's Basis of Iwahori Vectors and the Bruhat Order** *CANADIAN JOURNAL OF MATHEMATICS-JOURNAL CANADIEN DE MATHEMATIQUES*  
Bump, D., Nakasuji, M.  
2011; 63 (6): 1238-1253
  - **Weyl group multiple Dirichlet series, Eisenstein series and crystal bases** *ANNALS OF MATHEMATICS*  
Brubaker, B., Bump, D., Friedberg, S.  
2011; 173 (2): 1081-1120
  - **Weyl Group Multiple Dirichlet Series: Type A Combinatorial Theory** *Annals of Mathematics Studies*  
Bumps, D.  
Brubaker and Friedberg.2011; 175
  - **INTEGRATION ON p-ADIC GROUPS AND CRYSTAL BASES** *PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY*  
Bump, D., Nakasuji, M.  
2010; 138 (5): 1595-1605
  - **Gauss Sum Combinatorics and Metaplectic Eisenstein Series** *Workshop on Automorphic Forms and L-functions*  
Brubaker, B., Bump, D., Friedberg, S.  
AMER MATHEMATICAL SOC.2009: 61–81
  - **Weyl group multiple Dirichlet series III: Eisenstein series and twisted unstable  $A(r)$**  *ANNALS OF MATHEMATICS*  
Brubaker, B., Bump, D., Friedberg, S., Hoffstein, J.

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2007; 166 (1): 293-316

- **Weyl group multiple Dirichlet series II: The stable case** *INVENTIONES MATHEMATICAE*  
Brubaker, B., Bump, D., Friedberg, S.  
2006; 165 (2): 325-355
- **On the averages of characteristic polynomials from classical groups** *COMMUNICATIONS IN MATHEMATICAL PHYSICS*  
Bump, D., Gamburd, A.  
2006; 265 (1): 227-274
- **Lifting automorphic representations on the double covers of orthogonal groups** *DUKE MATHEMATICAL JOURNAL*  
Bump, D., Friedberg, S., Ginzburg, D.  
2006; 131 (2): 363-396
- **Derivatives of modular forms of negative weight** *PURE AND APPLIED MATHEMATICS QUARTERLY*  
Bump, D., Choie, Y.  
2006; 2 (1): 111-133
- **A summation formula for divisor functions associated to lattices** *FORUM MATHEMATICUM*  
Beineke, J., Bump, D.  
2006; 18 (6): 869-906
- **On Kubota's Dirichlet series** *JOURNAL FUR DIE REINE UND ANGEWANDTE MATHEMATIK*  
Brubaker, B., Bump, D.  
2006; 598: 159-184
- **Residues of Weyl group multiple Dirichlet series associated to  $GL(n+1)$**  *Bretton Woods Workshop on Multiple Dirichlet Series*  
Brubaker, B., Bump, D.  
AMER MATHEMATICAL SOC.2006: 115–134
- **Weyl group multiple Dirichlet series I** *Bretton Woods Workshop on Multiple Dirichlet Series*  
Brubaker, B., Bump, D., Chinta, G., Friedberg, S., Hoffstein, J.  
AMER MATHEMATICAL SOC.2006: 91–114
- **The Rankin Selberg Method: and Introduction and Survey** *Automorphic Representations, L-functions and Applications*  
Bump, D., Rallis, S.  
2005: 41- 73
- **Generalized Frobenius-Schur numbers** *JOURNAL OF ALGEBRA*  
Bump, D., Ginzburg, D.  
2004; 278 (1): 294-313
- **Moments of the Riemann zeta function and Eisenstein series - II** *JOURNAL OF NUMBER THEORY*  
Beineke, J., Bump, D.  
2004; 105 (1): 175-191
- **Moments of the Riemann zeta function and Eisenstein series - I** *JOURNAL OF NUMBER THEORY*  
Beineke, J., Bump, D.  
2004; 105 (1): 150-174
- **Lie Groups** *Springer Graduate Text in Mathematics*  
Bump, D.  
Springer.2004; 225
- **Sums of twisted  $GL(3)$  automorphic L-functions** *Conference on L-Functions and Automorphic Forms in honor of the 60th Birthday of Joe Shalika*  
Bump, D., Friedberg, S., Hoffstein, J.  
JOHNS HOPKINS UNIV PRESS.2004: 131–162
- **Renormalized periods on  $GL(3)$**  *CANADIAN JOURNAL OF MATHEMATICS-JOURNAL CANADIEN DE MATHEMATIQUES*  
Beineke, J., Bump, D.

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2003; 55 (5): 933-968

- **An L-function of degree 27 for Spin(9)** *RAMANUJAN JOURNAL*  
Bump, D., Ginzburg, D.  
2003; 7 (1-3): 63-78
- **Whittaker-Fourier coefficients of metaplectic Eisenstein series** *COMPOSITIO MATHEMATICA*  
Banks, W., Bump, D., Lieman, D.  
2003; 135 (2): 153-178
- **An Introduction to the Langlands Program**  
Bump, D., Gaitsgory, C., Shalit, D., Kowalski, Kudla  
edited by Bernstein, Gelbart  
Birkhäuser.2003
- **Small representations for odd orthogonal groups** *INTERNATIONAL MATHEMATICS RESEARCH NOTICES*  
Bump, D., Friedberg, S., Ginzburg, D.  
2003: 1363-1393
- **Toeplitz minors** *JOURNAL OF COMBINATORIAL THEORY SERIES A*  
Bump, D., Diaconis, P.  
2002; 97 (2): 252-271
- **Unitary correlations and the Fejer kernel - Dedicated to Harold Widom on his 70th birthday** *MATHEMATICAL PHYSICS ANALYSIS AND GEOMETRY*  
Bump, D., Diaconis, P., Keller, J. B.  
2002; 5 (2): 101-123
- **On the dimension of the space of theta functions** *PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY*  
Bump, D., Pekker, A.  
2002; 130 (12): 3473-3481
- **Hidden symmetries for a renormalized integral of Eisenstein series** *FORUM MATHEMATICUM*  
Beineke, J., Bump, D.  
2002; 14 (3): 457-475
- **On the cubic shimura lift for PGL(3)** *ISRAEL JOURNAL OF MATHEMATICS*  
Bump, D., Friedberg, S., Ginzburg, D.  
2001; 126: 289-307
- **On the dimension of the Jacquet module of a certain induced representation** *Conference on Ideal Theoretic Methods in Commutative Algebra*  
Banks, W., Bump, D., Lieman, D.  
MARCEL DEKKER.2001: 85-88
- **Spin L-functions on GSp(8) and GSp(10)** *TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY*  
Bump, D., Ginzburg, D.  
2000; 352 (2): 875-899
- **A local Riemann hypothesis, I** *MATHEMATISCHE ZEITSCHRIFT*  
Bump, D., Choi, K. K., Kurlberg, P., Vaaler, J.  
2000; 233 (1): 1-19
- **Rankin-Selberg integrals in two complex variables** *MATHEMATISCHE ANNALEN*  
Bump, D., Friedberg, S., Ginzburg, D.  
1999; 313 (4): 731-761
- **Metaplectic Generating Functions and Shimura Integrals** *AMS Proc. Sympos. Pure Math.*  
Bump, D., Friedberg, S.  
1999

- **Algebraic Geometry** *World Scientific*  
Bump, D.  
1999
- **The adjoint L-function of  $GL(4)$**  *JOURNAL FUR DIE REINE UND ANGEWANDTE MATHEMATIK*  
Bump, D., Ginzburg, D.  
1998; 505: 119-172
- **Explicit formulas for the Waldspurger and Bessel models** *ISRAEL JOURNAL OF MATHEMATICS*  
Bump, D., Friedberg, S., Furusawa, M.  
1997; 102: 125-177
- **Automorphic Forms and Representations**  
Bump, D.  
Cambridge University Press. 1997
- **The symmetric cube** *INVENTIONES MATHEMATICAE*  
Bump, D., Ginzburg, D., Hoffstein, J.  
1996; 125 (3): 413-449
- **On some applications of automorphic forms to number theory** *BULLETIN OF THE AMERICAN MATHEMATICAL SOCIETY*  
Bump, D., Friedberg, S., Hoffstein, J.  
1996; 33 (2): 157-175
- **Non-unique models in the Rankin-Selberg method** *JOURNAL FUR DIE REINE UND ANGEWANDTE MATHEMATIK*  
Bump, D., Furusawa, M., Ginzburg, D.  
1995; 468: 77-111
- **Unramified Whittaker functions for  $GL(3, \mathbb{R})$**  *JOURNAL D ANALYSE MATHEMATIQUE*  
Bump, D., Huntley, J.  
1995; 65: 19-44
- **UNIQUENESS OF WHITTAKER FUNCTIONALS ON THE METAPLECTIC GROUP** *DUKE MATHEMATICAL JOURNAL*  
Bump, D., Lieman, D.  
1994; 76 (3): 731-739
- **SUPERCUSPIDAL REPRESENTATIONS AND POINCARÉ-SERIES OVER FUNCTION-FIELDS** *TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY*  
Bump, D., Takahashi, S.  
1993; 340 (1): 395-413
- **SPIN L-FUNCTIONS ON SYMPLECTIC GROUPS** *DUKE MATHEMATICAL JOURNAL*  
Bump, D., Ginzburg, D.  
1992; 67 (2): 153-160
- **SYMMETRICAL SQUARE L-FUNCTIONS ON  $GL(\mathbb{R})$**  *ANNALS OF MATHEMATICS*  
Bump, D., Ginzburg, D.  
1992; 136 (1): 137-205
- **WHITTAKER-ORTHOGONAL MODELS, FUNCTORIALITY, AND THE RANKIN-SELBERG METHOD** *INVENTIONES MATHEMATICAE*  
Bump, D., Friedberg, S., Ginzburg, D.  
1992; 109 (1): 55-96
- **AN ESTIMATE FOR THE HECKE EIGENVALUES OF MAASS FORMS** *DUKE MATHEMATICAL JOURNAL*  
Bump, D., Duke, W., Hoffstein, J., Iwaniec, H.  
1992; 66 (1): 75-81
- **The symmetric square L-functions on  $G_1(n)$**  *Annals of Mathematics*  
Bump, D., Ginzburg, D.  
1992; 136: 137-205

- **P-ADIC WHITTAKER FUNCTIONS ON THE METAPLECTIC GROUP** *DUKE MATHEMATICAL JOURNAL*  
Bump, D., Friedberg, S., Hoffstein, J.  
1991; 63 (2): 379-397
- **THE KUBOTA SYMBOL FOR  $SP(4, \mathbb{Q}(i))$**  *NAGOYA MATHEMATICAL JOURNAL*  
Bump, D., Friedberg, S., Hoffstein, J.  
1990; 119: 173-188
- **NONVANISHING THEOREMS FOR L-FUNCTIONS OF MODULAR-FORMS AND THEIR DERIVATIVES** *INVENTIONES MATHEMATICAE*  
Bump, D., Friedberg, S., Hoffstein, J.  
1990; 102 (3): 543-618
- **EISENSTEIN SERIES ON THE METAPLECTIC GROUP AND NONVANISHING THEOREMS FOR AUTOMORPHIC L-FUNCTIONS AND THEIR DERIVATIVES** *ANNALS OF MATHEMATICS*  
Bump, D., Friedberg, S., Hoffstein, J.  
1990; 131 (1): 53-127
- **A NONVANISHING THEOREM FOR DERIVATIVES OF AUTOMORPHIC L-FUNCTIONS WITH APPLICATIONS TO ELLIPTIC-CURVES** *BULLETIN OF THE AMERICAN MATHEMATICAL SOCIETY*  
Bump, D., Friedberg, S., Hoffstein, J.  
1989; 21 (1): 89-93
- **ON MELLIN TRANSFORMS OF UNRAMIFIED WHITTAKER FUNCTIONS ON  $GL(3, \mathbb{C})$**  *JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS*  
Bump, D., Friedberg, S.  
1989; 139 (1): 205-216
- **BARNES 2ND LEMMA AND ITS APPLICATION TO RANKIN-SELBERG CONVOLUTIONS** *AMERICAN JOURNAL OF MATHEMATICS*  
Bump, D.  
1988; 110 (1): 179-185
- **POINCARÉ-SERIES AND KLOOSTERMAN SUMS FOR  $SL(3, \mathbb{Z})$**  *ACTA ARITHMETICA*  
Bump, D., Friedberg, S., Goldfeld, D.  
1988; 50 (1): 31-89
- **ON SHIMURA CORRESPONDENCE** *DUKE MATHEMATICAL JOURNAL*  
Bump, D., Hoffstein, J.  
1987; 55 (3): 661-691
- **SOME EULER PRODUCTS ASSOCIATED WITH CUBIC METAPLECTIC FORMS ON  $GL(3)$**  *DUKE MATHEMATICAL JOURNAL*  
Bump, D., Hoffstein, J.  
1986; 53 (4): 1047-1072
- **ON RIEMANN ZETA-FUNCTION** *MATHEMATISCHE ZEITSCHRIFT*  
Bump, D., NG, E. K.  
1986; 192 (2): 195-204
- **CUBIC METAPLECTIC FORMS ON  $GL(3)$**  *INVENTIONES MATHEMATICAE*  
Bump, D., Hoffstein, J.  
1986; 84 (3): 481-505
- **A Kronecker Limit formula for cubic fields** *proceedings of the Durham conference on Modular forms*  
Bump, D., Goldfeld, D.  
1984
- **AUTOMORPHIC-FORMS ON  $GL(3, \mathbb{R})$**  *LECTURE NOTES IN MATHEMATICS*  
Bump, D.  
1984; 1083: R1-?