

## VITA

### Robert Scott Rumely

**Date and Place of Birth:** June 23, 1952, Pullman, Washington

#### Academic Degrees:

B.A. 1974 Grinnell College, Grinnell, Iowa  
Ph.D. 1978 Princeton University, Princeton, New Jersey

#### Professional Experience:

1978-80 C.L.E. Moore Instructor, M.I.T.  
1980-81 Post-Doctoral Visiting Fellow, Harvard University  
1981-85 Assistant Professor, University of Georgia  
1985-90 Associate Professor, University of Georgia  
1990- Professor, University of Georgia

#### Visiting Positions:

1984 University of Michigan, Brown University  
1985 Macquarie University (Sydney), Tata Institute (Bombay), IHES (Paris)  
1987 Mathematic Sciences Research Institute (Berkeley)  
1998 University of Bordeaux I  
1999 Institute Henri Poincaré and University of Paris VI  
(Invited Professor: Special Trimestre on Diophantine Geometry)  
2012 ICERM Semester on Complex and  $P$ -adic dynamics, Providence  
(Resident Senior Research Mathematician)

#### Honors:

Creative Research Medal, University of Georgia, 1984  
Alfred P. Sloan Foundation Fellow, 1984-87  
McCay Award, UGA Mathematics Department, 1999

#### Research Grants:

NSF Research Grant, MCS 79-05942, 1979-1981  
NSF Research Grant, MCS 82-01792, 1982-1984  
Alfred P. Sloan Foundation, 1984-1987  
NSF Research Grant, DMS 88-11507, 1988-1990  
NSF Research Grant, DMS 91-03553, 1991-1994  
NSF Research Grant, DMS 95-00892, 1995-1999  
NSF Research Grant, DMS 00-70736, 2000-2003,  
NSF Research Grant, DMS 03-00784, 2003-2005 (joint with M. Baker)  
NSF Research Grant, DMS 06-01037, 2006-2010

#### Educational Grants:

UGA Curriculum Development Fund (with C. Penney and J. Gosselin), 1997, 1998  
“Development of the Calculus Lab”, “Implementation of the Calculus Lab”  
Regents Teaching and Learning Grant (with C. Penney and J. Gosselin), 1998,  
“Calculus Lab Conference for Georgia High School Teachers”

**Dissertation:**

Advisor, Goro Shimura: “An Explicit Formula for the Grössencharacter of an Abelian Variety with Complex Multiplication”, Princeton University, 1978.

**Books and Monographs:**

- (1) Capacity theory on algebraic curves, Springer Lecture Notes in Mathematics, No. 1378, (1989), 437 pp.
- (2) Existence of the sectional capacity (with C. F. Lau and R. Varley), *Memoirs of the American Mathematical Society* 145, no. 690 (2000), 130 pp.
- (3) Potential Theory and Dynamics on the Berkovich Projective Line (with M. Baker): *AMS Surveys and Monographs* 159, (2010), 428 pp.
- (4) The Fekete-Szegő theorem with Local Rationality Conditions on curves, submitted to the *AMS Surveys and Monographs* series, 451 pp.

**Articles:**

- (1) Undecidability and definability in the theory of global fields, *Trans. A.M.S.* 262 (1980), 195-217.
- (2) A formula for the grössencharacter of a parametrized elliptic curve, *J. Number Theory* 17 (1983), 389-402.
- (3) On the grössencharacter of an abelian variety in a parametrized family, *Trans. A.M.S.* 276 (1983), 213-233.
- (4) On distinguishing prime numbers from composites (with Len Adleman and Carl Pomerance), *Annals of Mathematics* 117 (1983), 173-206.
- (5) Arithmetic over the ring of all algebraic integers, *J. Reine Angew. Math.* 368 (1986), 127-133.
- (6) Recent advances in primality testing, *Notices of the A.M.S.*, August 1983, 475-477.
- (7) Capacity theory on curves and canonical heights, *Sem. groupe d'analyse ultramétrique*, 12e annee, 1984/85, no 22.
- (8) Zeros of p-adic exponential polynomials II (with A.J. van der Poorten), *J. London Math Soc.* (2) 36 (1987), 1-15.
- (9) Remarks on generalized power sums (with A.J. van der Poorten), *Bull. Austral. Math. Soc.* 36 (1987), 311-329.
- (10) A note on the Hadamard kth root of a rational function (with A.J. van der Poorten), *J. Austral. Math. Soc.* 43 (1987), 314-327.
- (11) Notes on van der Poorten's proof of the Hadamard quotient theorem (I,II), *Sem. th. nombres Paris (1986-87)*, *Progress in Mathematics* 75, I: 349-382, II: 383-409, Birkhauser, Boston.
- (12) The capacity pairing (with T. Chinburg), *J. Reine Angew. Math.* 434 (1993), 1-44.
- (13) The well-adjusted models theorem over Dedekind Rings (with T. Chinburg), in: *Arithmetic Algebraic Geometry*, C. Van derGeer, F. Oort, J. Steenbrink, eds., Birkhauser, Boston (1991), 3-24.
- (14) On the relation between Cantor's capacity and Chinburg's sectional capacity, *Duke Mathematical Journal* 70 (1993), 517-574.

- (15) Numerical computations concerning the ERH, *Math. Comp.* 61 (1993), 415-440.
- (16) Arithmetic capacities on  $\mathbf{P}^N$  (with C. F. Lau), *M Math Zeit* 215 (1994), 533-560.
- (17) An intersection pairing for curves with analytic contributions from nonarchimedean places, in: *Canadian Mathematical Society Conference Proceedings* 15 (1995), AMS, 325-357.
- (18) Primes in arithmetic progression (with O. Ramare), *Math. Comp.* 65 (1996), 397-425.
- (19) On Bilu's Equidistribution Theorem, in: *Contemporary Mathematics* 23 (1999), T. Branson, ed. AMS, 159-166.
- (20) A Fekete-Szegő theorem with splitting conditions (Part I), *Acta Arithmetica* 93 (2000), 99-116.
- (21) A Fekete-Szegő theorem with splitting conditions (Part II), *Acta Arithmetica* 103 (2002), 347-410.
- (22) Capacity theory and arithmetic intersection theory (with T. Chinburg and C. F. Lau), *Duke Math. J.* 117 (2003), 229-285.
- (23) Equidistribution of small points on curves, rational dynamics, and potential theory (with M. Baker), *Annales de l'Institut Fourier* 56 (2006), 625-688.
- (24) Harmonic analysis on metrized graphs (with M. Baker), *Canadian Journal of Mathematics* 59 (2007), 225-275.
- (25) A Robin formula for the Fekete-Leja transfinite diameter, *Mathematische Annalen* 337 (2007), 729-738.
- (26) Transfinite diameter and the resultant (with L. DeMarco), *J. Reine Angew. Math.* 611 (2007), 145-161.
- (27) A finiteness property of torsion points (with M. Baker and S. Ih), *Algebra and Number Theory* 2(2008), 217-248.

### Selected Talks:

- (1) University of Pennsylvania, November 1985, "Capacity Theory on Curves", "A Fekete-Szegő Theorem with Splitting Conditions".
- (2) Princeton University, November 1985, "Capacity Theory and a Rationality Criterion".
- (3) Cornell University, March 1986, "Hilbert's 10th Problem over the ring of all algebraic integers".
- (4) MSRI, February 1987, "Construction of Arakelov Green's Functions at Nonarchimedean Places".
- (5) University of Southern California, April 1987, "Capacity Theory and a Local-Global Criterion".
- (6) University of Illinois, April 1987, "Capacity Theory and Hilbert's 10th Problem", "Construction of Nonarchimedean Green's Functions".
- (7) UC Berkeley, May 1987, "An Introduction to Capacity Theory".
- (8) Number Theory Conference (Laval University), July 1987, "The Capacity Pairing".

- (9) 2nd Meeting of the Canadian Number Theory Society, Vancouver, B.C., August 1989, “The relation between Chinburg’s Sectional Capacity and Cantor’s capacity for algebraic curves”.
- (10) Oberwolfach meeting on Model theory, Oberwolfach, FRG, January 1990, “Capacity Theory and the local-global principle for  $\tilde{\mathcal{O}}$ ”.
- (11) DIMACS Conference, Rutgers, April 1991, “Numerical Computations concerning the ERH”.
- (12) Instructional Conference on Arakelov Theory, ICTP, Trieste, Italy, September 1992, “Green’s functions”.
- (13) Arakelov Theory meeting, Bonn, Germany, June 1994, “Existence of the arithmetic degree for adelic metrized line bundles”.
- (14) 4th Meeting of the Canadian Number Theory Association, Halifax, N.S., July 1994, “An intersection pairing for curves”.
- (15) University of Bordeaux I, June/July 1998: “Recent Advances in Arithmetic Capacity Theory”, “On Bilu’s Equidistribution Theorem”, “Existence of the Sectional Capacity”
- (16) Trimestre on Diophantine Geometry, Institute Henri Poincaré (Paris), January 1999, 12-hour course “Arithmetic Capacity Theory”,
- (17) CUNY, March 1999, “Existence of the Sectional Capacity”.
- (18) Conference on Heights on Moduli Spaces, U.C. Irvine, October 2000, “Capacity Theory and Intersection Theory”.
- (19) Arakelov Theory meeting, Luminy, France, May 2003, “The Fekete-Szegő theorem with splitting conditions”.
- (20) Conference on Algebraic Dynamics, CUNY, New York, May 2004, “Foundations of analysis on the Berkovich Line”.
- (21) Pluripotential Theory Meeting, BIRS (Banff, Canada), September 2004, “The Sectional Capacity I, II”.
- (22) Workshop on p-adic dynamics, Wesleyan University, May 2005, “A finiteness property of torsion points”.
- (23) IV International Workshop on Dynamics, San Pedro, Chile, August 2005, “A finiteness property of torsion points”.
- (24) SERMON 2006, Furman University, Greenville, S.C., May 2006, “It’s finiteness conjecture”.
- (25) PANTS I, University of South Carolina, Columbia, S.C., December 2006, “The Fekete-Szegő theorem with Splitting Conditions on Curves”.
- (26) Thematic Program on Arithmetic Geometry, Hyperbolic Geometry, and Related Topics: Mini-workshop on p-adic dynamics, Fields Institute, Toronto, October 2008, “Berkovich Space and Dynamics on Berkovich Space”, “Nonarchimedean Potential Theory and Dynamical Applications”.
- (27) Semester on Complex and  $P$ -adic Dynamics, ICERM, Providence, Jan–May 2012, “An introduction to Berkovich Spaces”, “An introduction to Arithmetic Capacity Theory”, “The Minimal Discriminant Problem”
- (28) Second Annual Upstate Number Theory Conference, University of Rochester, May 2012 “The Fekete-Szegő Theorem with Local Rationality Conditions”

**Conferences Organized:**

Calculus Lab Conference for Georgia High School Teachers, UGA, May 1998  
 VIGRE Summer School on Arithmetic Dynamics, UGA, May 2011

**Referee for Funding Agencies:**

NSF Proposal Reviewer, 1985–present  
 NSA Proposal Reviewer, 1992–present  
 NSF Post-Doctoral Fellowship Panel Member, 1998, 1999–2001  
 NSA Grant Selection Panel Member, 2002

**Referee for Mathematical Journals:**

Annals of Mathematics, American Journal of Mathematics, Mathematische Zeitschrift,  
 Compositio Mathematicae, Mathematische Annalen, Annales de l'Institut Fourier,  
 International Mathematical Research Notices,  
 Journal für die Reine und angewandte Mathematik, Journal of Number Theory,  
 Mathematics of Computation, Annales Scientifiques de l'École Normale Supérieure,  
 Functiones et Approximatio, Mathematical Research Letters, Journal of Algebra,  
 American Mathematical Monthly, Linear Algebra and its Applications,  
 Canadian Mathematical Bulletin, Experimental Mathematics

**Reviewer for:**

Mathematical Reviews,  
 Zentralblatt für Mathematik

**Book Reviews written:**

- (1) Elliptic Curves over Number Fields with Prescribed Reduction Type, by M. Laska. Vieweg & Sohn, Braunschweig; distributed by Heyden & Son, Inc., Philadelphia, PA, 1983.
- (2) The Arithmetic of Elliptic Curves, by J. Silverman. Graduate Texts in Mathematics 106, Springer-Verlag, New York, 1986.

**Doctoral Students:**

Steve Donnelly (graduated August 2003):  
 “Finding Elements of Given Order in Tate-Shafarevich Groups of Elliptic Curves”  
 Milton Nash (graduated August 2004):  
 “Special Values of Dirichlet L-series”  
 Charles Pooh (graduated May 2005):  
 “Capacity Theory and Algebraic Integers”  
 Daeshik Park (graduated August 2006):  
 “The Fekete-Szegö Theorem with Splitting Conditions  
 on the Projective Line of Positive Characteristic  $p$ ”  
 Zubeyir Cinkir (graduated August 2007):  
 “The Tau Constant of Metrized Graphs”  
 Nathan Walters (graduated May 2012);  
 “Some Capacity-Theoretic Results extended to Algebraic Curves”  
 Stephen Winburn (current student)  
 John Doyle (current student)

**Masters Students:**

Pongsak Ajjimarangsee (MAMS, August 1984):

“The Theory and Implementation of the Simplex Algorithm”

Chandra French (August 1994): “Non-quaternionic division algebras over  $\mathbf{Q}$ ”

Mee Seong Im (May 2007): (Masters, Non-thesis)

Renée Canfield (May 2008): “Three primality tests and Maple implementation”

**External Member of Jury for Doctoral Theses:**

Pascal Autissier, (E. Ullmo, advisor; Université de Paris Sud), 2001,

“Points entiers et théorèmes de Bertini Arithmétiques”

Amaury Thuillier, (A. Chambert-Loir, advisor; Université de Rennes I), 2005,

“Théorie du potentiel sur les courbes en géométrie analytique non archimédienne”

**External Assessor for Promotions:**

Ernst Kani, (Full Professor, Queens University), 1997

Paul van Wamelen, (Associate Professor, LSU), 2000

Antoine Chambert-Loir, (Membership, Institut Universitaire de France), 2005

Thomas Tucker, (Associate Professor, University of Rochester), 2006

Dragos Ghoica, (Associate Professor, University of British Columbia), 2011

**Post-Docs Mentored:**

Thomas Tucker, 1998–2002

Pierre Giguere, 1999–2001

Nathan Ng, 2001–2002

Su-Ion Ih, 2003–2005

Clay Petsche, 2004–2006

Matthew Smith, 2008–2009

Xander Faber, 2010–2011

**Membership on UGA Doctoral Committees:**

Ioannis Argyros, Mo Hendon, Renet Madra, Reza Akbari, Deborah Sherman, Ronnie Burthe, Jim Hagland, Huasong Yin, Steve Clark, Jon Grantham, Anitha Srinivasan, Shuguang Li, David Penniston, Kevin James, Dina Khalil, Pam Cutter, Glenn Fox, Steve Donnelly, Milton Nash, Michael Beck, Wayne Tarrant, Jim Blair, Eric Pine, Sungkon Chang, Daeshik Park, Damon Gang, Heon Kim, Michael Guy, Adam Fletcher, Nausheen Lotia, Kenyon Platt, Charles Pooh, Zubeyir Cinkir, Juhyung Yi, Steve Winburn, Jim Stankiewicz, Whitney Montgomery, Nathan Walters, Ebony Harvey

**Membership on UGA Masters' Committees:**

Greg Harrell, Allison Williamson, Lydia Moore, Lisford Isaac, Kai Lemmle,

Mee Seong Im, Renée Canfield

**Undergraduate Students Advised:**

Chris Ruf, Shawn O'Dell, John Moragne, Tracy Baliles, Joey Kruppa,

Hunter Weber, Sean Johnson, Ayla Shaw, Susan Kim, Amanda Karafotias,

Amy Tillman, Dan Prest, Stephanie Eden, Katie Thompson

**Teaching Faculty Memberships:**

UGA Graduate Faculty (Provisional Member), 1982–1985  
 UGA Honors Faculty (Member), 1983–present  
 UGA Graduate Faculty (Member), 1985–present

**Administrative Experience:**

Graduate Coordinator for Mathematics, UGA, 1992–1995  
 Interim Math 1113 Coordinator, UGA, Summer 2008

**University Service:**

Promotion and Tenure Committee (Division of Physical Sciences), 1997–1998  
 Anderson Award Selection Committee, 1997, 2000  
 Parking Services Task Force, 2001–2003  
 Franklin College Faculty Senate Member, 2001–2004  
     Professional Concerns Committee (Chair), 2002–2003  
     Senate Committee on Promotion/Tenure/PTR Guidelines, 2002–2003  
     President Pro Tem, 2003–2004  
 Franklin College Dean Search Committee, 2004  
 University Council Member, 2007–2010  
     UGA Benefits Committee, 2008–2011

**Departmental Service:**

Mathematics Executive Committee 1995–1999, 2002–2005, 2008–2009  
     (Vice-Chair, 1998–1999, 2004–2005)  
 Mathematics Graduate Program Committee, 1986–1994  
 Mathematics Personnel Committee, 1991–1992, 1999–2001, 2006–2008  
     (Chair, 1999–2000, 2006–2008)  
 Mathematics Curriculum Committee, 1986  
  
 Cantrell Lecture Committee (Chair), 2007  
 Academic Professional Search Committee (Chair), 2008  
  
 Calculus Textbook Selection Committee, 1984, 1988  
 Computer Advisory Committee, 1988  
 Teaching Improvement Panel, 1990–1991  
 Graduate Student Seminar Coordinator, 1989–1991  
 Ad Hoc Calculus Lab Committee, 1996  
 Calculus Lab Development Committee, 1997–1998  
 Calculus Lab Conference for High School Teachers (Organizer), 1998  
  
 REU on Metrized Graphs (joint with Matt Baker), June–July 2003  
 SURP student Kevin Mills, June–July 2003  
 REU on the Mathematics of Paper Folding, June–July 2009  
  
 Created model WebWork Homework sets for Math 2250, Spring 2007  
 Implemented Math 1113 in WebWork, Fall 2007  
  
 General Sandy Beaver Professorship Dossier for John Hollingsworth, 1997  
 Josiah Meigs Professorship Dossier for John Hollingsworth, 1998

General Sandy Beaver Professorship Dossier for David Penney, 1999  
Creative Research Award Dossier for Andrew Granville, 2000  
Full Professor Promotion Dossier for Dino Lorenzini, 2001  
Russell Teaching Award Dossier for Matthew Baker, 2004  
Sloan Fellowship Dossier for Matthew Baker, 2004  
Research Professorship Dossier for Dino Lorenzini, 2004, 2005  
Josiah Meigs Professorship Dossier for Sybilla Beckmann-Kazez, 2006, 2007  
Associate Professor Promotion Dossier for Pete L. Clark, 2010  
Associate Professor Promotion Teaching Dossier for Mike Usher, 2012