Mark Shimozono
Curriculum Vitae

Degrees
- B. S. Mathematics, Biola University, 1983.
- M. S. Mathematics, Stanford University, 1986.
- Ph. D. Mathematics, University of California, San Diego, 1991.

Appointments
- Postdoctoral Assistant Professor, School of Mathematics, University of Minnesota, 1991–1993.
- Visiting Assistant Professor, School of Mathematics, University of Minnesota, 1993–1994.
- National Science Foundation Postdoctoral Fellow, Department of Mathematics, Massachusetts Institute of Technology, 1994–1997.
- Assistant Professor, Department of Mathematics, Virginia Polytechnic Institute and State University, 1997–2001.
- Associate Professor with tenure, Department of Mathematics, Virginia Polytechnic Institute and State University, 2001-2005.
- Professor with tenure, Department of Mathematics, Virginia Polytechnic Institute and State University, 2005-present.
- Visiting Professor, Research Institute of Mathematical Sciences, Kyoto, Japan, October-December 2005.

Plenary addresses
- Conference on Formal Power Series and Algebraic Combinatorics, Moscow State University, Moscow, Russia, June 2000, "On Modules Supported in the Nullcone".
- AMS Spring Southeastern Meeting, Louisiana State University, March 29, 2008, "Schubert calculus for the affine Grassmannian".

Publications (appeared)
(1) (with V. Reiner) Key polynomials and a flagged Littlewood- Richardson rule, J. Combin. Theory Ser. A 70 (1995) 107–143.
(2) (with V. Reiner) Specht series for column convex diagrams, J. Algebra 174 (1995) 489–522.
(3) (with V. Reiner) Plactification, J. Algebraic Combin. 4 (1995) 331–351.
(4) (with S. V. Fomin, C. Greene, and V. Reiner) Balanced labellings and Schubert polynomials, European J. Combin. 18 (1997) 373–389.
(5) Specht modules for column-convex diagrams: characteristic-free results for Weyl modules, J. Algebra 192 (1997), no. 2, 810–822.
(6) (with V. Reiner) Straightening for standard monomials on Schubert varieties, J. Algebra 195 (1997), no. 1, 130–140.
(7) (with V. Reiner) Percentage-avoiding, northwest shapes and peelable tableaux, J. Combin. Theory Ser. A 82 (1998) 1–73.
(8) (with J. B. Remmel) A simple proof of the Littlewood-Richardson rule and applications, Selected papers in honor of Adriano Garsia (Taormina, 1994), Discrete Math. 193 (1998) 257–266.
(9) (with V. Reiner) Flagged Weyl modules for two-column shapes, J. Pure and Applied Algebra 141 (1999), 59–100.

(10) (with J. Weyman) Bases for coordinate rings of conjugacy classes of nilpotent matrices, J. Algebra 220 (1999) 1–55.

(11) Multiplying Schur Q-functions, J. Combin. Theory Ser. A 87 (1999) 198–232.

(12) (with A. N. Kirillov and A. Schilling) Various representations of the generalized Kostka polynomials, The Andrews Festschrift (Maratea, 1998), Sem. Lothar. Combin. 42 (1999) Art. B42j (electronic).

(13) On modules supported in the nullcone. Formal power series and algebraic combinatorics (Moscow, 2000), 67-75, Springer, Berlin, 2000.

(14) (with A. Schilling) New expressions for level-restricted Kostka polynomials. Formal power series and algebraic combinatorics (Moscow, 2000), 367-378, Springer, Berlin, 2000.

(15) (with J. Weyman) Graded characters of modules supported in the closure of a nilpotent conjugacy class, European J. Combin. 21 (2000) 257–288.

(16) (with J. Klimek, W. Kraskiewicz, and J. Weyman) On the Grothendieck group of modules supported in a nilpotent orbit in the Lie algebra $\mathrm{gl}(n)$, J. Pure and Applied Algebra 153 (2000) 237–261.

(17) (with A. Schilling) Bosonic formula for level restricted paths, Advanced Studies in Pure Mathematics 28 (2000) 305–325. and coset branching functions, Commun. Math. Phys. 220 (2001) 105–164.

(18) (with D. E. White), A color-to-spin domino Schensted algorithm, Electron. J. Combin. 8 (2001) Research Paper 21, 50 pp.

(19) A cyclage poset structure for Littlewood-Richardson tableaux. European J. Combin. 22 (2001) 365–393.

(20) Multi-atoms and monotonicity of generalized Kostka polynomials. European J. Combin. 22 (2001), 395–414.

(21) (with M. Zabrocki) Hall-Littlewood vertex operators and generalized Kostka polynomials. Adv. Math. 158 (2001) 66–85.

(22) (with M. Okado and A. Schilling) Crystal bases and q-identities, Contemp. Math. 291 (2001) 29–53.

(23) (with A. Schilling) Fermionic formulas for level-restricted generalized Kostka polynomials and coset branching functions, Commun. Math. Phys. 220 (2001) 105–164.

(24) (with A. N. Kirillov) A generalization of the Kostka-Foulkes polynomials, J. Algebraic Combin. 15 (2002) 27–69.

(25) Affine type A Crystal Structure on Tensor Products of Rectangles, Demazure characters, and Nilpotent Varieties, J. Algebraic Combin. 15 (2002) 151–187.

(26) (with A. N. Kirillov and A. Schilling) A bijection between Littlewood-Richardson tableaux and rigged configurations, Selecta Math. (N.S.) 8 (2002) 67–135.

(27) (with D. E. White) Color-to-spin ribbon Schensted algorithms, Formal power series and algebraic combinatorics (Barcelona, 1999), Discrete Math. 246 (2002) 295–316.

(28) (with A. Schilling and D. E. White) Branching formula for q-Littlewood-Richardson coefficients, Formal power series and algebraic combinatorics (Scottsdale, AZ, 2001), Adv. in Appl. Math. 30 (2003), no. 1-2, 258–272.

(29) (with M. Okado and A. Schilling) Virtual crystals and Kleber's algorithm, Comm. Math. Phys. 238 (2003), no. 1-2, 187–209.

(30) (with M. Okado and A. Schilling) A tensor product theorem related to perfect crystals, J. Algebra 267 (2003), no. 1, 212–245.

(31) (with M. Okado and A. Schilling) Virtual crystals and fermionic formulas of type $D_{n+1}^{(2)}$, $A_{2n}^{(2)}$, and $C_n^{(1)}$, Represent. Theory 7 (2003), 101–163.

(32) (with M. Okado and A. Schilling) A crystal to rigged configuration bijection for nonexceptional affine algebras, "Algebraic Combinatorics and Quantum Groups", Edited by N. Jing, World Scientific (2003), 85-124.

(33) (with A. Schilling) $X = M$ for symmetric powers, J. Algebra 295 (2006), no. 2, 562–610.

(34) (with M. Zabrocki) Deformed universal characters for classical and affine algebras, J. Algebra 299 (2006) no. 1, 33–61.

(35) (with A. Knutson and E. Miller) Four formulae for type A quiver polynomials, Inv. Math. 166 (2006), no. 2, 229–325.

(36) (with T. Lam) A Little bijection for affine Stanley symmetric functions, Sém. Lothar. Combin. 54A (2005/06), Art. B54Ai, 12 pp. (electronic).

(37) (with C. Lecouvey) Lusztig's q-analogue of weight multiplicity and one-dimensional sums for affine root systems, Adv. in Math. 208 (2007) 438–466.

(38) (with G. Fourier and A. Schilling) Demazure structure inside Kirillov-Reshetikhin crystals, J. Algebra 309 (2007) 386–404.

(39) (with T. Lam) Dual graded graphs for Kac-Moody algebras, Algebra and Number Theory 1 (2007) 451–488.

(40) (with A. Buch, A. Kresch, H. Tamvakis, and A. Yong) Stable Grothendieck polynomials and K-theoretic factor sequences, Math. Annalen 340 (2008) 359–382.

(41) (with M. Kashiwara) Equivariant K-theory of affine flag manifolds and affine Grothendieck polynomials, Duke Math. J. 148 (2009) 501–538.

(42) (with T. Lam, L. Lapointe, and J. Morse) Affine insertion and Pieri rules for the affine Grassmannian, Mem. Amer. Math. Soc. 208 (2010), no. 977.

(43) (with T. Lam) Quantum cohomology of G/P and homology of affine Grassmannian, Acta Math. 204 (2010), no. 1, 49–90.

(44) (with T. Lam and A. Schilling) Schubert polynomials for the affine Grassmannian of the symplectic group, Math. Z. 264 (2010), no. 4, 765811.

(45) (with T. Lam and A. Schilling) K-theory Schubert calculus of the affine Grassmannian, Compos. Math. 146 (2010), no. 4, 811–852.

(46) (with M. Okado and A. Schilling) $X = K$ under review, in "Infinite Analysis 2010, Developments in Quantum Integrable Systems", A. Kuniba et. al. (eds.), RIMS Kokyuroku Bessatsu B28, 2011.

(47) (with T. Lam) From quantum Schubert polynomials to k-Schur functions via the Toda lattice, Math. Research Letters 19 (2012), no. 1, 81–93.

(48) (with C. Lecouvey and M. Okado) Affine crystals, one-dimensional sums and parabolic Lusztig q-analogues, Math. Zeit. 271 (2012), no. 3–4, 819–865.

(49) (with T. Lam) Equivariant Pieri Rule for the homology of the affine Grassmannian. J. Algebraic Combin. 36 (2012), no. 4, 623–648.

(50) (with T. Lam, L. Lapointe, and J. Morse) k-shape poset and branching of k-Schur functions. Mem. Amer. Math. Soc. 223 (2013), no. 1050, vi+101 pp.

(51) (with T. Lam) k-Double Schur functions and equivariant (co)homology of the affine Grassmannian. Math. Ann. 356 (2013), no. 4, 1379–1404.

(52) (with C. Lenart, S. Naito, D. Sagaki, A. Schilling) A uniform model for Kirillov-Reshetikhin crystals. Extended abstract. DMCTS Proc. AS (2013) 25–36.

(53) (with T. Lam) Quantum double Schubert polynomials represent Schubert classes. Proc. Amer. Math. Soc. 142 (2014), no. 3, 835-850.

(54) (with C. Lenart) Equivariant K-Chevalley rules for Kac-Moody flag manifolds. Amer. J. Math. 136 (2014), no. 5, 1175-1213.

(55) (with T. Lam, L. Lapointe, J. Morse, A. Schilling, and M. Zabrocki) k-Schur Functions and Affine Schubert Calculus. Fields Institute Monographs, Vol. 33, Springer, 2014.

(56) (with C. Lenart, S. Naito, D. Sagaki, A. Schilling) A uniform model for Kirillov-Reshetikhin crystals I: Lifting the parabolic quantum Bruhat graph. Int. Math. Res. Not. doi: 10.1093/imrn/rnt263

(57) (with C. Lenart, S. Naito, D. Sagaki, A. Schilling) Explicit description of the degree function in terms of quantum Lakshmibai-Seshadri paths. Toyama Math. J. 37, 107–130.

(58) (with C. Lenart, S. Naito, D. Sagaki, A. Schilling) Quantum Lakshmibai-Seshadri paths and root operators, Proceedings of the 5th Mathematical Society of Japan Seasonal Institute. Schubert Calculus, Osaka, Japan, 2012; Advanced Studies in Pure Mathematics 71 (2016), 267–294.

(59) (with C. Lenart, S. Naito, D. Sagaki, A. Schilling) A Uniform Model for Kirillov-Reshetikhin Crystals II. Alcove Model, Path Model, and P=X. Int. Math. Res. Notices (2017) no. 14, 4259-4319.

(60) (with C. Lenart, S. Naito, D. Sagaki, A. Schilling) A uniform model for Kirillov-Reshetikhin crystals III: Nonsymmetric Macdonald polynomials at t = 0 and Demazure characters. Transform. Groups 22 (2017), no. 4, 1041-1079.

(61) (with C. Lenart, S. Naito, D. Sagaki, A. Schilling) Affine Crystals, Macdonald polynomials, and combinatorial models. Revue Roumaine Math. Pures Appl. 62 (2017) 1, 113–135.

(62) (with D. Orr) Specializations of nonsymmetric Macdonald-Koornwinder polynomials. J. Algebraic Combin. 47 (2018) 1, 91–127.

(63) (with J. Haglund and B. Rhoades) Ordered set partitions, generalized coinvariant algebras, and the Delta Conjecture. Advances in Mathematics 329 (2018), 851-915.

(64) (with T. Lam, Changzheng Li, L. C. Mihalcea)A conjectural Peterson isomorphism in K-theory. J. Algebra 513 (2018), 326-343.

Publications (accepted)

Publications (submitted)

 (1) (with D. Orr) Quiver Hall-Littlewood functions and Kostka-Shoji polynomials. http://arxiv.org/abs/1704.05178 Submitted to Selecta Math.

 (2) (with T. Lam and S. J. Lee) (2018) Back-stable Schubert calculus, submitted to Acta Math. http://arxiv.org/abs/1806.11233

 (3) (with J. Haglund and B. Rhoades) (2018) Hall-Littlewood expansions of Schur delta operators at t=0, submitted to Seminaire Lotharingien de Combinatoire. http://arxiv.org/abs/1801.08017