

CURRICULUM VITAE  
Sami H. Assaf

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## Education

**Ph.D. 2007** Mathematics, University of California Berkeley (Advisor: Mark Haiman)

**B.A. 2001** Honors Mathematics and Philosophy, *summa cum laude*, University of Notre Dame

## Employment

**Massachusetts Institute of Technology**

2008–11 C.L.E. Moore Instructor

**Mathematical Sciences Research Institute**

Sp 2008 Combinatorial Representation Theory Postdoctoral Fellow

**University of Pennsylvania**

2007–08 NSF Postdoctoral Research Fellow

## Research Interests

Algebraic combinatorics, combinatorial representation theory.

## Selected Awards

Association of Women in Mathematics Mentoring Grant, 02/2010.

Association of Women in Mathematics Travel Grant, 05/2009.

Herb Alexander Prize, for an outstanding dissertation in pure math at UC Berkeley, 05/2007.

National Science Foundation Mathematical Sciences Postdoctoral Research Fellowship, 02/2007.

King Juan Carlos I of Spain travel grant to attend the ICM, 02/2006.

Outstanding Graduate Student Instructor Award at UC Berkeley, 05/2005.

National Defense Science and Engineering Graduate Research Fellowship, 05/2002.

National Science Foundation Graduate Research Fellowship, 03/2001.

Koletis Award in Mathematics from University of Notre Dame, 05/2001.

Alice T. Schafer Prize, runner-up; awarded annually by the AWM, 01/2001.

## Publications/Preprints

1. *Dual Equivalence Graphs II: A characterization of D-graphs*, preprint 2010.
2. *Towards a kicking basis for Garsia-Haiman modules*, preprint, 2009.
3. (with Sara Billey) *Affine dual equivalence and k-Schur positivity*, preprint, 2009.
4. *Dual Equivalence Graphs I: A combinatorial proof of LLT and Macdonald positivity*, submitted, 2008.
5. *The Schur expansion of Macdonald polynomials*, submitted, 2008.
6. (with Persi Diaconis and K. Soundararajan) *A rule of thumb for riffle shuffles*, to appear in Adv. in Appl. Probab.
7. (with Peter McNamara) *A Pieri rule for skew shapes*, Journal of Combinatorial Theory, Series A **118** (2011), 277–290.
8. *Cyclic derangements*, Electronic Journal of Combinatorics **17** (2010), no. 1, Research Paper 163, 14 pp.

9. (with Peter McNamara) *A Pieri rule for skew shapes*, 22nd International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2010), 133–144, Discrete Math. Theor. Comput. Sci. Proc., AJ, Assoc. Discrete Math. Theor. Comput. Sci., 2010.
10. (with Adriano Garsia) *A kicking basis for two column Garsia-Haiman modules*, 21st International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2009), 103–114, Discrete Math. Theor. Comput. Sci. Proc., AJ, Assoc. Discrete Math. Theor. Comput. Sci., 2009.
11. (with Persi Diaconis and K. Soundararajan) *Riffle shuffles of a deck with repeated cards*, 21st International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2009), 89–102, Discrete Math. Theor. Comput. Sci. Proc., AJ, Assoc. Discrete Math. Theor. Comput. Sci., 2009.
12. *A combinatorial realization of Schur-Weyl duality via crystal graphs and dual equivalence graphs*, 20th International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2008), 141–152, Discrete Math. Theor. Comput. Sci. Proc., AJ, Assoc. Discrete Math. Theor. Comput. Sci., 2008.
13. *A generalized major index statistic*, Séminaire Lotharingien de Combinatoire **60** (2008), Art. B60c, 13 pp. (electronic).

## Conference Presentations

- 11/2010 Quasisymmetric Functions Workshop, *invited speaker*, Banff International Research Station, Banff, Canada.
- 11/2010 AMS Central Section Meeting, *invited speaker* for Special Session on Algebraic and Topological Combinatorics, Notre Dame, IN.
- 09/2010 Triangle Lectures in Combinatorics, *invited speaker*, Durham, NC.
- 07/2010 Affine Schubert Calculus Workshop, *invited speaker*, Fields Institute, Toronto, Canada.
- 06/2010 SIAM Conference on Discrete Mathematics, *invited speaker* for Minisymposium on Combinatorial Representation Theory Austin, TX.
- 04/2010 AMS Central Section Meeting, *invited speaker* for Special Session on Partition Theory and the Combinatorics of Symmetric Functions, St. Paul, MN.
- 04/2010 AMS Central Section Meeting, *invited speaker* for Special Session on Combinatorial Representation Theory, St. Paul, MN.
- 03/2010 Combinatorial representation theory, *invited speaker*, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany
- 03/2010 Localization techniques in equivariant cohomology, *invited speaker*, American Institute of Mathematics, Palo Alto, CA.
- 01/2010 Joint Mathematics Meeting, *invited speaker* for AMS Special Session on Enumerative Combinatorics, San Francisco, CA.
- 10/2009 AMS Fall Eastern Section Meeting, *invited speaker* for Special Session on Algebraic Combinatorics, University Park, PA.
- 07/2009 Formal Power Series and Algebraic Combinatorics, Hagenberg, Austria.
- 01/2009 Connections for Women: Algebraic Geometry and Related Fields, Mathematical Sciences Research Institute, Berkeley, CA.
- 10/2008 AMS Western Regional Meeting, *invited speaker* for Special Session on Combinatorial Representation Theory, Vancouver, Canada.
- 06/2008 Formal Power Series and Algebraic Combinatorics, Valparaiso, Chile.
- 04/2008 MIT Women In Mathematics: A Celebration, *invited panelist*, Cambridge, MA.
- 01/2008 Introductory Workshop on Combinatorial Representation Theory, *invited speaker*, Mathematical Sciences Research Institute, Berkeley, CA.
- 09/2007 Applications of Macdonald Polynomials, *invited speaker*, Banff International Research Station, Banff, Canada.
- 07/2007 Formal Power Series and Algebraic Combinatorics, Tianjin, P.R. China.
- 05/2007 Combinatorial Hopf Algebras and Macdonald polynomials, *invited speaker*, Centre de

Recherches Mathematiques, Montreal, Canada.

- 04/2007 AMS Western Regional Meeting, *invited speaker* for Special Session on Algebraic Combinatorics, Tuscon, AZ.  
 07/2005 Generalized Kostka polynomials, American Institute of Mathematics, Palo Alto, CA.

## Seminars and Colloquia

- 02/2010 *Colloquium*, University of Southern California, Los Angeles, CA.  
 02/2010 *Colloquium*, Dartmouth College, Hanover, NH.  
 01/2010 *Distinguished Visiting Professor Lectures*, Bucknell University, Lewisburg, PA.  
 01/2010 *Combinatorics Seminar*, University of Minnesota, Minneapolis, MN.  
 01/2010 *Colloquium*, University of Minnesota, Minneapolis, MN.  
 11/2009 *Geometry-Algebra-Singularities-Combinatorics Seminar*, Northeastern University, Boston, MA.  
 11/2009 *Algebra Seminar*, University of Connecticut, Storrs, CT.  
 11/2009 *Combinatorics Seminar*, University of Michigan, Ann Arbor, MI.  
 10/2009 *Algebra and Combinatorics Seminar*, North Carolina State University, Raleigh, NC.  
 03/2009 *Undergraduate Mathematics Association Lecture Series*, MIT, Cambridge, MA.  
 03/2009 *Combinatorics and Algebraic Geometry Seminar*, Univ. of Pennsylvania, Philadelphia, PA.  
 01/2009 *Combinatorics Seminar*, UC San Diego, La Jolla, CA.  
 10/2008 *Combinatorics Seminar*, MIT, Cambridge, MA.  
 10/2008 *Probability Seminar*, MIT, Cambridge, MA.  
 10/2008 *Combinatorics and Geometry Seminar*, University of Washington, Seattle, WA.  
 04/2008 *Combinatorics Seminar*, MIT, Cambridge, MA.  
 11/2007 *Combinatorics and Probability Seminar*, University of Pennsylvania, Philadelphia, PA.  
 11/2007 *Algebra Seminar*, North Carolina State University, Raleigh, NC.  
 10/2007 *Colloquium*, UC San Diego, La Jolla, CA.  
 04/2007 *Combinatorics Seminar*, University of Minnesota, Minneapolis, MN.  
 04/2007 *Colloquium*, University of Notre Dame, South Bend, IN.  
 12/2006 *Combinatorics Seminar*, MIT, Cambridge, MA.  
 11/2006 *Combinatorics and Probability Seminar*, University of Pennsylvania, Philadelphia, PA.  
 11/2006 *Representation Theory, Geometry and Combinatorics Seminar*, UC Berkeley, Berkeley, CA.  
 10/2006 *Discrete Mathematics and Representation Theory Seminar*, UC Davis, Davis, CA.

## Teaching Experience

### Massachusetts Institute of Technology

*Lecturer*: Seminar in Discrete Mathematics ( $\times 2$ ), Combinatorial Analysis  
*Recitations*: Multivariable Calculus

### University of California, Berkeley

*Lecturer*: Graduate Algebra Workshop ( $\times 4$ ), Graduate Analysis Workshop  
*Recitations*: Integral Calculus ( $\times 2$ ), Linear Algebra, Discrete Math, Abstract Algebra

## Professional Activities

- Journals refereed: Advances in Applied Mathematics; American Mathematical Monthly; Annals of Combinatorics; Annals of Mathematics; Electronic Journal of Combinatorics; International Mathematics Research Notices; Journal of Algebraic Combinatorics; Journal of Combinatorial Theory, Series A; Journal of Combinatorics.  
 Served on multiple NSF panels and as individual grant proposal reviewer for NSA and NSF  
 Co-organizer of the MIT Combinatorics Seminar (08/2009 - present)  
 Co-organizer of AWM Schafer Minisymposium at 2011 Joint Mathematics Meeting  
 Organizing committee member for semi-annual Bay Area Discrete Math Day (08/2007-07/2008)  
 Organizer of the Postdoc Seminar at MSRI (01/2008-05/2008)  
 Member of the UC Berkeley Mathematics Department Webpage Committee (09/2004-08/2005)  
 President of the Noetherian Ring at UC Berkeley (09/2003-12/2004)  
 Co-organizer of the Mentor Lecture Series at UC Berkeley (09/2001 - 05/2002)