

Stanford

Ravi Vakil

Professor of Mathematics

Bio

BIO

For a bio, please see my homepage: <http://math.stanford.edu/~vakil/>

ACADEMIC APPOINTMENTS

- Professor, Mathematics

ADMINISTRATIVE APPOINTMENTS

- multiple, multiple (see my homepage <http://math.stanford.edu/~vakil/> for more information), (2001- present)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- multiple, multiple (see my homepage <http://math.stanford.edu/~vakil/> for details) (2015 - present)

LINKS

- My homepage: <http://math.stanford.edu/~vakil/>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Algebraic geometry and related subjects. For a complete publication list, see my publication page <http://math.stanford.edu/~vakil/preprints.html> rather than the list here.

Teaching

COURSES

2020-21

- Introduction to Algebraic Geometry: MATH 216A (Aut)
- Introduction to Algebraic Geometry: MATH 216B (Win)
- Topics in Algebraic Geometry: MATH 245C (Spr)

2019-20

- Groups and Rings: MATH 120 (Aut)
- Modern Algebra II: MATH 210B (Win)
- Topics in Algebraic Geometry: MATH 245B (Win)

2018-19

- Galois Theory: MATH 121 (Win)
- Modern Algebra II: MATH 210B (Win)
- Topics in Algebraic Geometry: MATH 245A (Aut)

2017-18

- Introduction to Algebraic Geometry: MATH 216A (Aut)
- Introduction to Algebraic Geometry: MATH 216B (Win)
- Polya Problem Solving Seminar: MATH 193 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Nikolas Kuhn, Ka Yu Tam, Bogdan Zavyalov

Doctoral Dissertation Advisor (AC)

Hannah Larson, Matt Larson, Wyatt Mackey, Libby Taylor

Doctoral Dissertation Co-Advisor (AC)

Naomi Kraushar

Publications

PUBLICATIONS

- **MOTIVIC HILBERT ZETA FUNCTIONS OF CURVES ARE RATIONAL** *JOURNAL OF THE INSTITUTE OF MATHEMATICS OF JUSSIEU*
Bejleri, D., Ranganathan, D., Vakil, R.
2020; 19 (3): 947–64
- **DISCRIMINANTS IN THE GROTHENDIECK RING (vol 164, pg 1139, 2015)** *DUKE MATHEMATICAL JOURNAL*
Vakil, R., Wood, M.
2020; 169 (4): 799–800
- **Formal pseudodifferential operators and Witten's r-spin numbers** *JOURNAL FUR DIE REINE UND ANGEWANDTE MATHEMATIK*
Liu, K., Vakil, R., Xu, H.
2017; 728: 1–33
- **REUs with Limited Faculty Involvement, "Underrepresented" Subjects in the Undergraduate Curriculum, and the Culture of Mathematics**
Rubinstein, Y. A., Vakil, R., Peterson, M. A., Rubinstein, Y. A.
WORLD SCIENTIFIC PUBL CO PTE LTD.2016: 53–72
- **DISCRIMINANTS IN THE GROTHENDIECK RING** *DUKE MATHEMATICAL JOURNAL*
Vakil, R., Wood, M. M.
2015; 164 (6): 1139-1185
- **The Chow ring of the moduli space of curves of genus six** *ALGEBRAIC GEOMETRY*
Penev, N., Vakil, R.
2015; 2 (1): 123–36
- **The geometry of eight points in projective space: representation theory, Lie theory and dualities** *PROCEEDINGS OF THE LONDON MATHEMATICAL SOCIETY*
Howard, B., Millson, J., Snowden, A., Vakil, R.
2012; 105: 1215-1244
- **THE IDEAL OF RELATIONS FOR THE RING OF INVARIANTS OF n POINTS ON THE LINE: INTEGRALITY RESULTS** *COMMUNICATIONS IN ALGEBRA*
Howard, B., Millson, J., Snowden, A., Vakil, R.
2012; 40 (10): 3884-3902
- **The ideal of relations for the ring of invariants of n points on the line** *JOURNAL OF THE EUROPEAN MATHEMATICAL SOCIETY*
Howard, B., Millson, J., Snowden, A., Vakil, R.
2012; 14 (1): 1-60

- **The Moduli Space of Curves, Double Hurwitz Numbers, and Faber's Intersection Number Conjecture** *ANNALS OF COMBINATORICS*
Goulden, I. P., Jackson, D. M., Vakil, R.
2011; 15 (3): 381-436
- **The Mathematics of Doodling** *AMERICAN MATHEMATICAL MONTHLY*
Vakil, R.
2011; 118 (2): 116-129
- **Universal covering spaces and fundamental groups in algebraic geometry as schemes** *JOURNAL DE THEORIE DES NOMBRES DE BORDEAUX*
Vakil, R., Wickelgren, K.
2011; 23 (2): 489-526
- **A short proof of the lambda(g)-conjecture without Gromov-Witten theory: Hurwitz theory and the moduli of curves** *JOURNAL FUR DIE REINE UND ANGEWANDTE MATHEMATIK*
Goulden, I. P., Jackson, D. M., Vakil, R.
2009; 637: 175-191
- **$\pi(p)$, the Value of π in $l(p)$** *AMERICAN MATHEMATICAL MONTHLY*
Keller, J. B., Vakil, R.
2009; 116 (10): 931-935
- **The relations among invariants of points on the projective line** *COMPTE RENDUS MATHÉMATIQUE*
Howard, B., Millson, J., Snowden, A., Vakil, R.
2009; 347 (19-20): 1177-1182
- **THE EQUATIONS FOR THE MODULI SPACE OF n POINTS ON THE LINE** *DUKE MATHEMATICAL JOURNAL*
Howard, B., Millson, J., Snowden, A., Vakil, R.
2009; 146 (2): 175-226
- **Geometric positivity in the cohomology of homogeneous spaces and generalized Schubert calculus** *AMS Summer Research Institute on Algebraic Geometry*
Coskun, I., Vakil, R.
AMER MATHEMATICAL SOC.2009: 77-124
- **A description of the outer automorphism of S_6 , and the invariants of six points in projective space** *JOURNAL OF COMBINATORIAL THEORY SERIES A*
Howard, B., Millson, J., Snowden, A., Vakil, R.
2008; 115 (7): 1296-1303
- **Intersections of Schubert varieties and other permutation array schemes** *Workshop on Algorithms in Algebraic Geometry*
Billey, S., Vakil, R.
SPRINGER.2008: 21-54
- **The moduli space of curves and Gromov-Witten theory** *CIME Summer School on Enumerative Invariants in Algebraic Geometry and String Theory*
Vakil, R.
SPRINGER-VERLAG BERLIN.2008: 143-198
- **A desingularization of the main component of the moduli space of genus-one stable maps into P^n** *GEOMETRY & TOPOLOGY*
Vakil, R., Zinger, A.
2008; 12: 1-95
- **Absolute Galois Acts Faithfully on the Components of the Moduli Space of Surfaces: A Belyi-Type Theorem in Higher Dimension** *INTERNATIONAL MATHEMATICS RESEARCH NOTICES*
Easton, R. W., Vakil, R.
2007
- **A natural smooth compactification of the space of elliptic curves in projective space** *ELECTRONIC RESEARCH ANNOUNCEMENTS OF THE AMERICAN MATHEMATICAL SOCIETY*
Vakil, R., Zinger, A.
2007; 13: 53-59
- **Schubert induction** *ANNALS OF MATHEMATICS*

- Vakil, R.
2006; 164 (2): 489-512
- **A geometric Littlewood-Richardson rule** *ANNALS OF MATHEMATICS*
Vakil, R.
2006; 164 (2): 371-422
 - **Murphy's law in algebraic geometry: Badly-behaved deformation spaces** *INVENTIONES MATHEMATICAE*
Vakil, R.
2006; 164 (3): 569-590
 - **Towards the geometry of double Hurwitz numbers** *ADVANCES IN MATHEMATICS*
Goulden, I. P., Jackson, D. M., Vakil, R.
2005; 198 (1): 43-92
 - **Relative virtual localization and vanishing of tautological classes on moduli spaces of curves** *DUKE MATHEMATICAL JOURNAL*
Graber, T., Vakil, R.
2005; 130 (1): 1-37
 - **The affine stratification number and the moduli space of curves** *CRM Workshop on Algebraic Structures and Moduli Spaces*
Roth, M., Vakil, R.
AMER MATHEMATICAL SOC.2004: 213-227
 - **Hodge integrals and Hurwitz numbers via virtual localization** *COMPOSITIO MATHEMATICA*
Graber, T., Vakil, R.
2003; 135 (1): 25-36
 - **The Gromov-Witten potential of a point, Hurwitz numbers, and Hodge integrals** *PROCEEDINGS OF THE LONDON MATHEMATICAL SOCIETY*
Goulden, I. P., Jackson, D. M., Vakil, R.
2001; 83: 563-581
 - **Genus 0 and 1 Hurwitz numbers: Recursions, formulas, and graph-theoretic interpretations** *TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY*
Vakil, R.
2001; 353 (10): 4025-4038