

List of Publications - Chris Peterson

Commutative Algebra/Algebraic Geometry

- [1] C. Peterson, *Applications of Liaison Theory to Schemes Supported on Lines, Growth of the Deficiency Module, and Low Rank Vector Bundles*, PhD Thesis (1994), Advisors: David Morrison of Duke University and Juan Migliore of The University of Notre Dame
- [2] C. Peterson, *Powers of ideals and growth of the deficiency module*, Queen's Papers in Pure and Applied Mathematics; Curves Seminar at Queen's vol.9, Queen's University, Kingston, Ontario (1994)
- [3] J. Migliore, C. Peterson, Y. Pitteloud, *Ropes in projective space*, Journal of Mathematics of Kyoto University Vol. 36 pg 251-278 (1996)
- [4] C. Peterson, *Monomial curves and schemes supported on lines*, Communications in Algebra Vol. 25 (7) pg 2029-2037 (1997)
- [5] J. Migliore and C. Peterson, *A construction of codimension three arithmetically Gorenstein subschemes of projective space*, Transactions of the AMS Vol. 349 pg 3803-3821 (1997)
- [6] C. Peterson, *Quasi-complete intersections, powers of ideals and deficiency modules*, Journal of Algebra Vol. 204 pg 1-14 (1998)
- [7] J. Migliore, U. Nagel and C. Peterson, *Buchsbaum-Rim sheaves and their multiple sections*. Journal of Algebra Vol. 219 pg 378-420 (1999)
- [8] M. Kreuzer, J. Migliore, U. Nagel and C. Peterson, *Determinantal schemes and Buchsbaum-Rim sheaves*, Journal of Pure and Applied Algebra Vol. 150, Issue 2 pg 155-174 (2000)
- [9] J. Migliore, U. Nagel and C. Peterson, *Constructing schemes with prescribed cohomology in arbitrary codimension*, Journal of Pure and Applied Algebra Vol. 152, Issue 1-3 (Special Edition in honor of David Buchsbaum) pg 245-251 (2000)
- [10] N.M. Kumar, C. Peterson and A.P. Rao, *Hilbert Scheme components in characteristic 2*, Communications in Algebra Vol. 28 (12) (Special Edition in honor of Robin Hartshorne's Birthday) pg 5735-5744 (2000)
- [11] J. Migliore, U. Nagel and C. Peterson, *Bezout's theorem and Cohen-Macaulay modules*, Mathematische Zeitschrift Vol. 237 pg 373-394 (2001)
- [12] J. Kleppe, J. Migliore, R-M. Miro-Roig, U. Nagel and C. Peterson, *Gorenstein liaison, complete intersection liaison invariants and unobstructedness*, Memoirs of the AMS 732 (2001)

- [13] J. Kleppe and C. Peterson, *Maximal Cohen-Macaulay Modules and Gorenstein Algebras*, Journal of Algebra Vol. 238 pg 776-800 (2001)
- [14] N.M. Kumar, C. Peterson and A.P. Rao, *Constructing Low Rank Vector Bundles on \mathbb{P}^4 and \mathbb{P}^5* , Journal of Algebraic Geometry Vol. 11 pg 203-217 (2002)
- [15] J. Kleppe and C. Peterson, *Sheaves with Canonical determinant on Cohen-Macaulay schemes*, Journal of Algebra Vol. 256 pg 250-279 (2002)
- [16] N.M. Kumar, C. Peterson and A.P. Rao, *Degenerating families of rank two Bundles*, Proceedings of the AMS Vol. 131 Number 12 pg 3681-3688 (2003)
- [17] N.M. Kumar, C. Peterson and A.P. Rao, *Standard Vector Bundle Deformations on \mathbb{P}^n* , Contemporary Mathematics 322 “Hilbert Schemes, Vector Bundles and their interplay with Representation Theory (Columbia , MO 2002)” pg 151-163 (2003)
- [18] N.M. Kumar, C. Peterson and A.P. Rao, *Monads on Projective Spaces*, Manuscripta Mathematica Vol. 112 Number 2 pg 183-189 (2003)
- [19] H. Abo, G. Ottaviani and C. Peterson, *Induction for secant varieties of Segre varieties*, Trans. Amer. Math. Soc. Vol. 361 Number 2 pg 767-792 (2009)
- [20] H. Abo, H. Kley and C. Peterson, *On two-plane arrangements in P^4 with Petersen incidence graphs*, Advances in Geometry Vol. 9 Number 3 pg 349-370 (2009)
- [21] H. Abo, G. Ottaviani and C. Peterson, *Non-defectivity of Grassmannians of planes*, Journal of Algebraic Geometry Vol. 21 pg 1-20 (2012)

Numerical/Computational Algebraic Geometry

- [22] J. Migliore and C. Peterson, *A Symbolic Algorithm for (i,j) -Uniformity of Reduced Zero Dimensional Schemes*, Journal of Symbolic Computation Vol. 37 Number 3 pg 403-413 (2004)
- [23] D. Arapura and C. Peterson, *The common invariant subspace problem: an approach via Gröbner bases*, Linear Algebra and its Applications Vol. 384 pg 1-7 (2004)
- [24] H. Abo and C. Peterson, *Implementation of Kumar’s correspondence*, In ISSAC ’06 (International Symposium on Symbolic and Algebraic Computation, Genoa, Italy), pg 9-16, ACM Press, New York (2006)
- [25] D. Bates, C. Peterson and A. Sommese, *A numerical-symbolic algorithm for computing the multiplicity of a component of an algebraic set*, Journal of Complexity 22 (4) pg 475-489 (2006)
- [26] D. Bates, C. Peterson and A. Sommese, *Applications of a Numerical Version of Terracini’s Lemma for Secants and Joins*, Algorithms in Algebraic Geometry: The IMA Volumes in Mathematics and its Applications, Vol. 146 pg 1-14 Springer Science, New York (2008)
- [27] E. Smith and C. Peterson, *Geometric properties of locally minimal energy configurations of points on spheres and special orthogonal groups*, Extended Abstract in *Milestones in Computer Algebra MICA 2008: A conference in honour of Keith Geddes’ 60th birthday*.

- [28] J. Hauenstein, J. Migliore, C. Peterson, A. Sommese, *Numerical Computation of the Dimension of the Cohomology of Twists of Ideal Sheaves*, Contemporary Mathematics 496 “Interactions of Classical and Numerical Algebraic Geometry (Notre Dame, IN 2008)”, pg 235-242, (2009)
- [29] D. Bates, J. Hauenstein, C. Peterson, A. Sommese, *A local Dimension Test*, SIAM J. Numer. Anal. Volume 47, Issue 5, pp. 3608-3623 (2009)
- [30] D. Bates, J. Hauenstein, C. Peterson, A. Sommese, *Numerical decomposition of the rank-deficiency set of a polynomial matrix*, Approximate Commutative Algebra, L. Robbiano and J. Abbott (eds.), Texts and Monographs in Symbolic Computation, Springer-Verlag, Vienna (2010)
- [31] D. Bates, C. Peterson, A. Sommese and C. Wampler, *Numerical computation of the genus of an irreducible curve within an algebraic set*, Journal of Pure and Applied Algebra Vol. 215, Issue 8 pg 1844-1851 (2011)
- [32] S. Di Rocco, D. Eklund, C. Peterson, A. Sommese *Chern numbers of smooth varieties via homotopy continuation and intersection theory*, Journal of Symbolic Computation, Volume 46, Issue 1, pp 23-33 (2011).
- [33] E. Hanson, F. Motta, C. Peterson, L. Ziegelmeier *On the Strengthening of Topological Signals in Persistent Homology through Vector Bundle Based Maps*, Proceedings of the Canadian Conference on Computational Geometry 2012, pg 303-308
- [34] D. Bates, D. Eklund, C. Peterson *Intersections of Chern numbers of smooth varieties*, Journal of Symbolic Computation Vol. 50, pg 493-507 (2013)
- [35] D. Eklund, C. Jost, C. Peterson, *A method to compute Segre classes of subschemes of projective space*, Journal of Algebra and its Applications Vol 12, Number 2 (2013)
- [36] D. Bates, J. Hauenstein, T. McCoy, C. Peterson, A. Sommese, *Recovering exact results from inexact numerical data in algebraic geometry*, Experimental Mathematics, Vol. 22, Issue 1, pg 38-50 (2013)
- [37] Zac Griffin, Jon Hauenstein, Chris Peterson and Andrew Sommese, *Numerical computation of the Hilbert function of a zero-scheme*, Springer Proceedings in Mathematics and Statistics: Connections between Algebra and Geometry, Vol 76 (2014)
- [38] D. Bates, W. Decker, J. Hauenstein, C. Peterson, G. Pfister, F.O. Schreyer, A. Sommese, C. Wampler, *Comparison of probabilistic algorithms for analyzing components of an affine algebraic variety*, Applied Mathematics and Computation, Vol 231, pg 619-633 (2014)
- [39] B. Draper, M. Kirby, J. Marks, T. Marrinan, C. Peterson, *A Flag Representation for Finite Collections of Subspaces of Mixed Dimensions*, Linear Algebra and its Applications 451, pg 15-32 (2014)
- [40] D. Bates, B. Davis, D. Eklund, E. Hanson, C. Peterson, *Perturbed Homotopies for Finding All Isolated Solutions of Polynomial Systems*, Applied Mathematics and Computation, Vol 247, pg 301-311 (2014)
- [41] D. Bates, B. Davis, M. Kirby, J. Marks, C. Peterson, *The max-length-vector line of best fit to a set of vector subspaces and an optimization problem over a set of hyperellipsoids*, Numerical Linear Algebra with Applications, Volume 22, pg 453-464, (2015)

Combinatorics/Discrete

[42] C. Frederick and C. Peterson, *Ramsey Regions*, Discrete Mathematics Vol. 308 (18) pg 4079-4085 (2008)

[43] G. Failla, C. Peterson, R. Utano, *Algorithms and Asymptotics for Generalized Numerical Semigroups in \mathbb{N}^d* , Semigroup Forum, To Appear (2015)

Geometric Data Analysis/Applications

[44] C. Peterson, J. Rosenthal, P. Weiner, *Connections between multidimensional systems theory and algebraic geometry*, Proceedings of the 34th Annual Allerton Conference on Communications, Control and Computing pg 583-592 (1997)

[45] R. Beveridge, Jen-Mei Chang, B. Draper, M. Kirby, H. Kley, and C. Peterson, *Illumination Face Spaces are Idiosyncratic*, In IPCV '06, volume 2 (International Conference on Image Processing, Computer Vision and Pattern Recognition), pages 390-396. CSREA Press, (2006)

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[51] B. Draper, M. Kirby, T. Marrinan, C. Peterson, *Finding the Subspace Mean or Median to Fit Your Need*, CVPR 2014

[52] T. Marrinan, R. Beveridge, B. Draper, M. Kirby, C. Peterson, *Flag Manifolds for the Characterization of Geometric Structure in Large Data Sets*, Proceedings of ENUMATH 2013, the 10th European Conference on Numerical Mathematics and Advanced Applications, Lausanne, August 2013, Springer Lecture Notes in Computational Science and Engineering, Vol 103, Abdulle, A., Deparis, S., Kressner, D., Nobile, F., Picasso, M. (Eds.) (2014)

[53] K. Wang, J. Thompson, C. Peterson, M. Kirby, *Identity maps and their extensions on parameter spaces: Applications to anomaly detection in video*, Proceedings of Science and Information Conference (SAI) 2015

[54] Sofya Chepushtanova, Michael Kirby, Chris Peterson, L. Ziegelmeier *An Application of Persistent Homology on Grassmann Manifolds for the Detection of Signals in Hyperspectral Imagery*, IGAARS (2015)

Patents

[55] M. Kirby and C. Peterson, *US Patent # 7,917,540 for "Nonlinear Set to Set Pattern Recognition"*, Publication Date: March 29, 2011.

[56] M. Kirby, J. Beveridge, J-M Chang, B. Draper, H. Kley, C. Peterson, *US Patent # 8,116,566 for "Unknown Pattern Set Recognition"*, Publication Date: February 12, 2012.