

PREPRINTS

- [“Hilbert’s Tenth Problem and the Inverse Galois Problem”](#), with [Francesca Baliestrieri](#) and [Jennifer Park](#)
- [“On definitions of polynomials over function fields of positive characteristic”](#)

PUBLICATIONS

- [Computability in infinite Galois Theory and algorithmically random algebraic fields](#), (with [Wesley Calvert](#) and [Valentina Harizanov](#)) to appear in Journal of LMS.
- [“Defining \$\mathbb{Z}\$ using unit groups”](#), with [Barry Mazur](#) and [Karl Rubin](#), [Acta Arith. 214 \(2024\)](#), 235–255
- [“In memory of Martin Davis”](#), [Calver, Wesley](#); [Harizanov, Valentina](#); [Omodeo, Eugenio G.](#); [Policriti, Alberto](#); [Shlapentokh, Alexandra](#), [Notices Amer. Math. Soc. 71 \(2024\)](#), no. 7, 898–907.
- [“Existential definability and Diophantine stability”](#), with [Barry Mazur](#) and [Karl Rubin](#), [Journal of Number Theory 254 \(2024\)](#), 1-64
- [“On existential definitions of C.E. subsets of rings of functions of characteristic 0”](#), with [Russell Miller](#), [Annals of Pure and Applied Logic, 173 \(2022\)](#), Paper No. 103076, 50 pp.
- [Review of “Hilbert’s Tenth Problem” by M. Ram Murty and Brandon Fodden](#), [Notices of AMS, 68 \(2021\)](#), no 4, 576-579
- [“Divisibility of Order and First Order Definability and Decidability in Infinite Algebraic Extensions of Rational Numbers”](#), [Israel Journal of Math, 226 \(2018\)](#), no. 2, 579–633.
- [“A Computable Functor From Graphs to Fields”](#) with [Russell Miller](#), [Bjorn Poonen](#), [Hans Schoutens](#), [Journal of Symbolic Logic, 83\(1\)](#), March 2018, 326-348
- [“On decidable algebraic fields”](#) with [Moshe Jarden](#), [Journal of Symbolic Logic, 82\(2\)](#), June 2017, 474-488
- [“As Easy as \$\mathbb{Q}\$: Hilbert’s Tenth Problem for Subrings of the Rationals and Number Fields”](#) with [Kirsten Eisentraeger](#), [Russell Miller](#), [Jennifer Park](#), [Transactions of the American Mathematical Society, 369\(11\)](#), November 2017, 8291–8315
- [“Hilbert’s Tenth Problem over Function Fields of Positive Characteristic Not Containing the Algebraic Closure of a Finite Field”](#) with [Kirsten Eisentraeger](#), [Journal of the European Math Society, 19\(7\)](#), 2017, 2103-2138
- [“Turing degrees of isomorphism types of geometric objects”](#) with [Wesley Calvert](#) and [Valentina Harizanov](#), [Computability, Volume 3 \(2\)](#), pages 105-134, September 2014
- [“Definability and Decidability in Infinite Algebraic Extensions”](#) with [Carlos Videla](#), [Annals of Pure and Applied Logic, 165 \(2014\)](#), no. 7-8, 1243–1262

- [“Categoricity Properties for Computable Algebraic Fields”](#) with [Denis Hirschfeldt](#), [Ken Kramer](#), and [Russell Miller](#), Transactions of AMS, published electronically 10/20/14
- [“Computable Categoricity for Algebraic Fields with Splitting Algorithms”](#) with [Russell Miller](#), Transactions of AMS, published electronically 10/20/14
- [“Using Indices of Points on an Elliptic Curve to Construct A Diophantine Model of \$\mathbb{Z}\$ and Define \$\mathbb{Z}\$ Using One Universal Quantifier in Very Large Subrings of Number Fields, Including \$\mathbb{Q}\$ ”](#), International Journal of Number Theory, Volume No.08, Issue No. 6, (2012) 1335–1365
- [“Hilbert’s Tenth Problem and Mazur’s Conjectures in Complementary Subrings of Number Fields”](#) (with [Kirsten Eisentraeger](#) and Graham Everest), Math. Research Letters, 18 (2011), no. 06, 1141–1162
- [“The analogue of Büchi’s problem for function fields”](#) (with [Xavier Vidaux](#)), [Journal of Algebra, Volume 330, Issue 1](#), 15 March 2011, Pages 482-506
- [“Defining Integers”](#), Bulletin of Symbolic Logic, Volume 17, Number 2, June 2011, page 230-251.
- [“Rational Inseparability of Integral Closure”](#), Journal of Number Theory, Volume 129, Issue 10, Pages 2227-2646 (October 2009)
- “Undecidability in function fields of positive characteristic” (with [Kirsten Eisentraeger](#)), IMRN, 2009, no. 21, 4051–4086. [Click here for the link.](#)
- [“Diophantine Undecidability of Holomorphy Rings of Function Fields of Characteristic 0”](#) (with [Laurent Moret-Bailly](#)), les Annales de l’Institut Fourier, volume 55, number 5, (2009), p. 2103-2118
- [“Rings of Algebraic Numbers in Infinite Extensions of \$\mathbb{Q}\$ and Elliptic Curves Retaining Their Rank”](#), the Proceedings of the Conference on Model Theory and Computable Model Theory, University of Florida, 2007, Archive for Mathematical Logic, vol. 48, 2009, 77-114
- [“Defining the integers in large rings of number fields using one universal quantifier”](#), Zapiski Nauchnykh Seminarov POMI, volume 358, 2008, p. 199 - 223 (with [Gunther Cornelissen](#))
- Book: Hilbert’s Tenth Problem: Diophantine Classes and Other Extensions to Global Fields, Cambridge University Press, 2006. To see a preliminary draft, please click on the following link: [linked pdf file of the book](#). All reports of errors are very much appreciated.
- “Diophantine Definability and Decidability in Extensions of Degree 2 of Totally Real Fields”, Journal of Algebra, volume 313(2), 2007, pages 846-896. [Click here for a preliminary version.](#)
- [“Turing Degrees of Isomorphism Types of Algebraic Objects”](#) (with [Wesley Calvert](#) and [Valentina Harizanov](#)), Journal of the London Mathematical Society, 75 (2), 2007, pages 273-286
- [“Elliptic Curves Retaining Their Rank in Finite Extensions and Hilbert’s Tenth Problem”](#), Transactions of AMS, volume 360 (7), 2008
- “First Order Definitions of Rational Functions and \mathbb{Z} -integers over Holomorphy Rings of Algebraic Functions of Characteristic 0”, Annals of Pure and Applied Logic, pages 267-283, Volume 136, Issue 3, November 2005 [\(Click here for a preliminary version\)](#)
- “Diophantine Definability of Infinite Discrete non-Archimedean Sets and Diophantine Models for Large Subrings of Number Fields” (with [Bjorn Poonen](#)), Journal für die Reine und Angewandte Mathematik, Volume 588, pages 27-47
- “Diophantine undecidability for some function fields of infinite transcendence degree and positive characteristic”, (in Russian) in Zapiski Nauchnykh Seminarov POMI, volume 304, (2003), pages 141-167. [\(Click here for the Russian version\)](#) English translation of

the paper can be found in Journal of Mathematical Sciences, Volume 130, Number 2, pages 4631 – 4642. [\(Click here for the link to the English version\)](#)

- “On Diophantine definability and decidability in some infinite totally real extensions of \mathbb{Q} ”, Transactions of AMS, volume 356, number 8, 3189-3207. [Click here for the link to the article](#)
- “Existential Definability with Bounds on Archimedean Valuations”, Journal of Symbolic Logic, volume 68, Issue 3, September 2003, 860-878. [Click here for the article](#)
- “A Ring Version of Mazur’s Conjecture on Topology of Rational Points”, IMRN, 2003:7, 2003, pages 411-423. [Click here for the link to the article.](#)
- “On Diophantine definability and decidability in large subrings of totally real number fields and their totally complex extensions of degree 2”, Journal of Number Theory (95), 2002, pages 227-252. [Click here for the link to the article.](#)
- “Diophantine undecidability of function fields of characteristic greater than 2 finitely generated over a field algebraic over a finite field”, Compositio Mathematica, volume 132(1), May 2002, 99-120. [Click here for a link to the article.](#)
- “Generalized Weak Presentations”, Journal of Symbolic Logic, volume 67, number 2, 2002, pages 787-819
- “On Diophantine decidability and definability in some rings of algebraic functions of characteristic 0”, Journal of Symbolic Logic, volume 67, number 2, 2002, pages 759-786
- “Defining Integrality at Prime Sets of High Density over Function Fields”, Monatshefte fuer Mathematik, vol 135 (2002), 59-67
- “Hilbert’s Tenth Problem over Number Fields, a Survey”, Proceedings of Workshop on Hilbert’s Tenth Problem: Relation with Arithmetic and Algebraic Geometry, Ghent, Belgium, November 1999. Contemporary Mathematics, volume 270, pages 107-137.
- “Diophantine Definability over Non-finitely Generated Non-degenerate Modules of Algebraic Extensions of \mathbb{Q} ”, Archive for Mathematical Logic, volume 40, number 4, (2001), pages 297-328. [Click here for the link to the article.](#)
- “Towards Hilbert’s Tenth Problem for Algebraic Number Fields”, Proceedings of joint AMS-IMS-SIAM Summer Conference on Computability Theory and Applications, June 1999, Boulder, Co, Contemporary Mathematics, Volume 257, 2000, AMS, Providence, RI
- “Defining Integrality at Prime Sets of High Density in Number Fields”, Duke Mathematical Journal, Volume 101, Number 1, 2000, 117-134
- “Hilbert’s Tenth Problem for Algebraic Function Fields over Infinite Fields of Constants of Positive Characteristic”, Pacific Journal of Mathematics, Volume 193, Number 2, 2000, pages 463-500
- “Weak Presentations of Fields Not Extendible to Recursive Presentations”, Recursion Theory and Complexity, Proceedings of the Kazan 97 Workshop, Kazan, July 1997, Walter de Gruyter, New York, 1999, pages 131-156.
- “Weak Presentations of Non-finitely Generated Fields”, Annals of Pure and Applied Logic, Volume 94, (1998), 223-252.
- “Diophantine Definability Over Holomorphy Rings of Algebraic Function Fields with Infinite Number of Primes allowed as Poles”, International Journal of Mathematics, Volume 9, No. 8, (1998), 1041-1066.
- “Holomorphy Modules of Number Fields and Function Fields”, with Heather Ries, Algebra Colloquium, vol. 5(2), 1998, 219-240.
- “Diophantine Definability over Some Rings of Algebraic Numbers with Infinite Number of Primes Allowed in the Denominator”, Inventiones Mathematicae, vol 129(3), 1997, 489-507.

- “The Logic of Pseudo S-integers”, Israel Journal of Mathematics, vol 101, (1997), 229-254.
- “Polynomials with a Given Discriminant over Fields of Functions of Positive Characteristic”, Pacific Journal of Mathematics, volume 173, Number 2, April 1996.
- “Algebraic and Turing Separability of Rings”, Journal of Algebra, volume 185, 229-257.
- “Diophantine Undecidability over Algebraic Function Fields over Finite Fields of Constants”, Journal of Number Theory, volume 58, Number 2, June 1996, 317-342.
- “Rational Separability over a Global Field”, Annals of Pure and Applied Logic , vol 79, 1996, p. 93-108.
- “Non-Standard Extensions of Weak Presentations”, Journal of Algebra, vol 176, 1995, p. 735-749
- “Weak Presentations of Computable Fields”, Journal of Symbolic Logic, Volume 60, Number 1, March 1995, pp. 199-208 (with [Carl Jockusch](#)).
- “Diophantine Classes of Holomorphy Rings of Global Fields”, Journal of Algebra, 169(1), October 1994, pp. 139-175.
- “Diophantine Equivalence and Countable Rings”, Journal of Symbolic Logic, 59(3), September 1994, pp. 1068-1095.
- “Diophantine Undecidability for Some Holomorphy Rings of Algebraic Functions of Characteristic 0”, Communications in Algebra, 22(11), August 1994, pp. 4379-4404.
- “Diophantine Undecidability in Some Rings of Algebraic Numbers of Totally Real Infinite Extensions of \mathbb{Q} ”, Annals of Pure and Applied Logic, 68 (1994), pp. 299-325.
- “Diophantine Relations Between the Rings of S-integers of Fields of Algebraic Functions in One Variable Over Constant Fields of Positive Characteristic”, Journal of Symbolic Logic, 58(1), March 1993, pp. 158-192.
- “A Diophantine Definition of Rational Integers in Some Rings of Algebraic Numbers”, Notre Dame Journal of Formal Logic, 33(3), Summer 1992, pp. 299-321.
- “Hilbert’s Tenth Problem for Rings of Algebraic Functions of Positive Characteristic”, Transactions of American Mathematical Society, 333(1) September 1992, pp. 275-298.
- “Hilbert’s Tenth Problem for Rings of Algebraic Functions of Characteristic Zero”, Journal of Number Theory, 40(2), (February 1992), pp. 218-236.
- “Diophantine Definitions for Rings of Rational Numbers”, Communications on Pure and Applied Mathematics, Vol. XLIV, (1991), pp. 853-867.
- “Diophantine Definitions for Some Polynomial Rings”, Communications on Pure and Applied Mathematics, Vol. XLIII, (1990), pp. 1055-1066.
- “Diophantine Relations Between Algebraic Number Fields”, (with Harold Shapiro), Communications on Pure and Applied Mathematics, Vol. XLII (1989), pp. 1113- 1122.
- “Extension of Hilbert’s Tenth Problem to Some Algebraic Number Fields”, Communications on Pure and Applied Mathematics, Vol. XLII (1989), pp. 939-962.

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