

Curriculum Vitae

Keith A. Kearnes

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Research Interests:

Algebra, Logic, Combinatorics

Degrees:

Ph.D., University of California, Berkeley, 1988
M.S., University of California, Riverside, 1983
B.S., University of California, Riverside, 1982

Professional Experience:

University of Colorado

2007–present Professor
2001–2007 Associate professor
2000–2001 Assistant professor

University of Louisville

1999–2000 Associate professor
1998–1999 Assistant professor

Visiting positions/Extended research visits:

Johannes Kepler University, Austria, Fall 2014
University of Szeged, Hungary, Fall 2010
University of Hawaii, Spring 2006
University of Louisville, 1997–98
Fields Institute, Fall 1996
University of Arkansas, 1995–97
Darmstadt University of Technology, Germany, 1993–95
Harvey Mudd College, 1992–93
Vanderbilt University, 1990–92
University of Hawaii, 1988–90

Publications:

Authors are listed in alphabetical order.

Research Monograph:

1. K. A. Kearnes, and E. W. Kiss, *The Shape of Congruence Lattices*, Mem. Amer. Math. Soc. **222** (2013), no. 1046, viii+169 pp.

Published Research Papers:

1. K. A. Kearnes, *On the relationship between AP, RS and CEP*, Proc. Amer. Math. Soc. **105** (1989), no. 4, 827–839.
2. K. A. Kearnes, *Atomicity and nilpotence*, Canad. J. Math. **42** (1990), no. 2, 1–18.
3. K. A. Kearnes, *Relatively congruence distributive subquasivarieties of a congruence modular variety*, Bull. Austral. Math. Soc. **41** (1990), no. 1, 87–96.
4. K. A. Kearnes, *Congruence lower semimodularity and 2-finiteness imply congruence modularity*, Algebra Universalis **28** (1991), no. 1, 1–11.
5. K. A. Kearnes, *Residual bounds for varieties of modules*, Algebra Universalis **28** (1991), no. 3, 448–452.
6. K. A. Kearnes, *Finite algebras that generate an injectively complete variety*, Bull. Austral. Math. Soc. **44** (1991), no. 2, 303–324.
7. K. A. Kearnes, *Type preservation in locally finite varieties with the CEP*, Canad. J. Math. **43** (1991), no. 4, 748–769.
8. K. A. Kearnes and R. McKenzie, *Commutator theory for relatively modular quasivarieties*, Trans. Amer. Math. Soc. **331** (1992), no. 2, 465–502.
9. K. A. Kearnes, *Congruence permutable and congruence 3-permutable locally finite varieties*, J. Algebra **156** (1993), no. 1, 36–49.
10. K. A. Kearnes, *An order-theoretic property of the commutator*, Internat. J. Algebra Comput. **3** (1993), no. 4, 491–533.
11. K. A. Kearnes, *Natural examples of quasivarieties with EDPM*, Algebra Universalis **30** (1993), no. 4, 598–600.
12. P. Agliano and K. A. Kearnes, *Congruence semimodular varieties I: locally finite varieties*, Algebra Universalis **32** (1994), no. 2, 224–269.
13. P. Agliano and K. A. Kearnes, *Congruence semimodular varieties II: regular varieties*, Algebra Universalis **32** (1994), no. 2, 270–296.
14. K. A. Kearnes and R. Willard, *Inherently nonfinitely based solvable algebras*, Canad. Math. Bull. **37** (1994), no. 4, 514–521.
15. R. Freese, K. A. Kearnes and J. B. Nation, *Congruence lattices of congruence semidistributive algebras*, in *Lattice Theory and its Applications* (Darmstadt, 1991), 63–78, Res. Exp. Math. **23**, Heldermann, Lemgo, 1995.
16. K. A. Kearnes, *Every nearly idempotent plain algebra generates a minimal variety*, Algebra Universalis **34** (1995), no. 2, 322–325.
17. K. A. Kearnes, *Semilattice modes, I: the associated semiring*, Algebra Universalis **34** (1995), no. 2, 220–272.

18. K. A. Kearnes, *Semilattice modes, II: the amalgamation property*, Algebra Universalis **34** (1995), no. 2, 273–303.
19. K. A. Kearnes, *A quasi-affine representation*, Internat. J. Algebra Comput. **5** (1995), no. 6, 673–702.
20. K. A. Kearnes, *Minimal clones with abelian representations*, Acta Sci. Math. **61** (1995), no. 1-4, 59–76.
21. K. A. Kearnes, *Varieties with a difference term*, J. Algebra **177** (1995), no. 3, 926–960.
22. K. A. Kearnes, *Idempotent simple algebras*, in *Logic and Algebra* (Pontignano, 1994), 529–572, Lecture Notes in Pure and Appl. Math. **180**, 1996.
23. K. A. Kearnes, *Cardinality bounds for subdirectly irreducible algebras*, J. Pure Appl. Algebra **112** (1996), no. 3, 293–312.
24. K. A. Kearnes, *Locally solvable factors of varieties*, Proc. Amer. Math. Soc. **124** (1996), no. 12, 3619–3625.
25. K. A. Kearnes and F. Vogt, *Bialgebraic contexts from dualities*, J. Austral. Math. Soc. **60** (1996), no. 3, 389–404.
26. K. A. Kearnes, *Critical algebras and the Frattini congruence, II*, Bull. Austral. Math. Soc. **53** (1996), no. 1, 91–100.
27. K. A. Kearnes, *A Hamiltonian property for nilpotent algebras*, Algebra Universalis **37** (1997), no. 4, 403–421.
28. K. A. Kearnes and Á. Szendrei, *A characterization of minimal, locally finite varieties*, Trans. Amer. Math. Soc. **349** (1997), no. 5, 1749–1768.
29. K. A. Kearnes, *The class of prime semilattices is not finitely axiomatizable*, Semigroup Forum **55** (1997), no. 1, 133–134.
30. K. A. Kearnes and Á. Szendrei, *Self-rectangulating varieties of type 5*, Internat. J. Algebra Comput. **7** (1997), no. 4, 511–540.
31. B. Csákány and K. A. Kearnes, *Algebras whose subalgebras and reducts are trivial*, Acta Sci. Math. **63** (1997), no. 3-4, 377–379.
32. K. A. Kearnes, E. W. Kiss and M. Valeriote, *Minimal sets and varieties*, Trans. Amer. Math. Soc. **350** (1998), no. 1, 1–41.
33. K. A. Kearnes and Á. Szendrei, *The relationship between two commutators*, Internat. J. Algebra Comput. **8** (1998), no. 4, 497–531.
34. K. A. Kearnes and Á. Szendrei, *Projectivity and isomorphism of strictly simple algebras*, Algebra Universalis **39** (1998), no. 1-2, 45–56.
35. K. A. Kearnes and E. W. Kiss, *Modularity prevents tails*, Proc. Amer. Math. Soc. **127** (1999), no. 1, 11–19.
36. K. A. Kearnes and R. Willard, *Finiteness properties of locally finite abelian varieties*, Internat. J. Algebra Comput. **9** (1999), no. 2, 157–168.
37. K. A. Kearnes, E. W. Kiss and M. Valeriote, *A geometric consequence of residual smallness*, Ann. Pure Appl. Logic **99** (1999), no. 1-3, 137–169.
38. K. A. Kearnes and E. W. Kiss, *Finite algebras of finite complexity*, Discrete Math. **207** (1999), no. 1-3, 89–135.
39. K. A. Kearnes and R. Willard, *Residually finite congruence meet semidistributive varieties of finite type have a finite residual bound*, Proc. Amer. Math. Soc. **127**

- (1999), no. 10, 2841–2850.
40. K. A. Kearnes, *Subdirectly irreducible modes*, Discuss. Math. Algebra Stochastic Methods. **19** (1999), no. 1, 129–145.
 41. K. A. Kearnes and Á. Szendrei, *The classification of commutative minimal clones*, Discuss. Math. Algebra Stochastic Methods **19** (1999), no. 1, 147–178.
 42. K. A. Kearnes and M. Valeriote, *A modification of Polin’s variety*, Algebra Universalis **41** (1999), no. 3, 229–231.
 43. K. A. Kearnes and Á. Szendrei, *The residual character of strictly simple term minimal algebras*, Algebra Universalis **42** (1999), no. 4, 269–292.
 44. K. A. Kearnes, *Congruence modular varieties with small free spectra*, Algebra Universalis **42** (1999), no. 3, 165–181.
 45. K. A. Kearnes, *A characterization of locally finite varieties that satisfy a nontrivial congruence identity*, Algebra Universalis **42** (1999), no. 3, 195–204.
 46. K. A. Kearnes, *Categorical quasivarieties via Morita equivalence*, J. Symbolic Logic **65** (2000), no. 2, 839–856.
 47. K. A. Kearnes, *Almost all minimal idempotent varieties are congruence modular*, Algebra Universalis **44** (2000), no. 1-2, 39–45.
 48. K. A. Kearnes and Á. Szendrei, *Collapsing permutation groups*, Algebra Universalis **45** (2001), no. 1, 35–51.
 49. G. Czédli, R. Halaš, K. A. Kearnes, P. P. Pálffy, and Á. Szendrei, *The join of two minimal clones and the meet of two maximal clones*, Algebra Universalis **45** (2001), no. 2-3, 161–178.
 50. K. A. Kearnes and E. W. Kiss, *Left and right nilpotence degree are independent*, Contributions to General Algebra **13**, Verlag Johannes Heyn, Klagenfurt, 2000.
 51. K. A. Kearnes, Á. Szendrei and J. Wood, *Generating singular transformations*, Semigroup Forum **63** (2001), no. 3, 441–448.
 52. K. A. Kearnes, *Congruence join semidistributivity is equivalent to a congruence identity*, Algebra Universalis **46** (2001), no. 3, 373–387.
 53. K. A. Kearnes, E. W. Kiss, Á. Szendrei, and R. Willard, *Chief factor sizes in finitely generated varieties*, Canad. J. Math. **54** (2002), no. 4, 736–756.
 54. K. A. Kearnes and L. Sequeira, *Hausdorff properties of topological algebras*, Algebra Universalis **47** (2002), no. 4, 343–366.
 55. K. A. Kearnes and E. W. Kiss, *Residual smallness and weak centrality*, Internat. J. Algebra Comput. **13** (2003), no. 1, 35–59.
 56. L. Conaway and K. A. Kearnes, *Minimal sets in finite rings*, Algebra Universalis **51** (2004), no. 1, 81–109.
 57. K. A. Kearnes and Á. Szendrei, *Groups with identical subgroup lattices in all powers*, J. Group Theory **7** (2004), no. 3, 385–402.
 58. K. A. Kearnes and Á. Szendrei, *Clones of finite groups*, Algebra Universalis **54** (2005), no. 1, 23–52.
 59. K. A. Kearnes, *Congruence lattices of locally finite algebras*, Algebra Universalis **54** (2005), no. 2, 237–248.
 60. K. A. Kearnes and E. W. Kiss, *The triangular principle is equivalent to the triangular scheme*, Algebra Universalis **54** (2005), no. 3, 273–283.

61. K. A. Kearnes, *Quasivarieties of modules over path algebras of quivers*, *Studia Logica* **83** (2006), 333–349.
62. K. A. Kearnes and A. W. Marczak, *p_n -sequences of algebras with one fundamental operation*, *Algebra Universalis* **56** (2007), no. 1, 69–75.
63. K. A. Kearnes and S. T. Tschantz, *Automorphism groups of squares and of free algebras*, *Internat. J. Algebra Comput.* **17** (2007), no. 3, 461–505.
64. K. A. Kearnes and Á. Szendrei, *Clones closed under conjugation. I. Clones with constants*. *Internat. J. Algebra Comput.* **18** (2008), no. 1, 7–58.
65. K. A. Kearnes and J. B. Nation, *Axiomatizable and nonaxiomatizable congruence prevarieties*, *Algebra Universalis* **59** (2008), 323–335.
66. K. A. Kearnes, J. Shaw, and Á. Szendrei, *Clones of 2-step nilpotent groups*, *Algebra Universalis* **59** (2008), 491–512.
67. P. Idziak, K. A. Kearnes, E. W. Kiss and M. Valeriote, *Definable principal congruences and solvability*, *Ann. Pure and Appl. Logic* **157** (2009), 30–49.
68. K. A. Kearnes, *On the functional completeness of simple tournaments*, *Algebra Universalis* **61** (2009), 475–478.
69. K. A. Kearnes *An axiomatic formation that is not a variety*, *J. Group Theory* **13** (2010), no. 2, 233–241.
70. K. A. Kearnes and Y. J. Kwak, *Residually finite varieties of nonassociative algebras*, *Comm. Algebra* **38** (2010), no. 8, 3705–3727.
71. K. A. Kearnes and G. Oman, *Cardinalities of residue fields of Noetherian integral domains*, *Comm. Algebra* **38** (2010), no. 8, 3580–3588.
72. K. A. Kearnes and Á. Szendrei, *Clones of algebras with parallelogram terms* *Internat. J. Algebra Comput.* **22** (2012), no. 1, 1250005, 30 pp.
73. M. Behrisch, M. Couceiro, K. A. Kearnes, E. Lehtonen and Á. Szendrei, *Commuting polynomial operations of distributive lattices*, *Order* **29** (2012), no. 2, 245–269.
74. T. Dent, K. A. Kearnes and Á. Szendrei, *An easy test for congruence modularity*, *Algebra Universalis* **67** (2012), no. 4, 375–392.
75. K. A. Kearnes and G. Oman, *Jónsson posets and Jónsson unary algebras*, *Algebra Universalis* **69** (2013), no. 2, 101–112.
76. G. Grasegger, G. Horváth and K. A. Kearnes, *Polynomial equivalence of finite rings*, *J. Aust. Math. Soc.* **96** (2014), no. 2, 244257.
77. K. A. Kearnes, P. Marković, and R. N. McKenzie, *Optimal strong Mal'cev conditions for omitting type 1 in locally finite varieties*, *Algebra Universalis* **72** (2014), no. 1, 91–100.
78. K. A. Kearnes, E. W. Kiss and Á. Szendrei, *Growth rates of algebras II: Wiegold dichotomy*, *Internat. J. Algebra Comput.* **25** (2015), no. 4, 555–566.
79. K. A. Kearnes, E. W. Kiss, and Á. Szendrei, *Growth rates of algebras, I: pointed cube terms*. *J. Aust. Math. Soc.* **101** (2016), no. 1, 56–94.
80. K. A. Kearnes, Á. Szendrei and R. Willard, *A finite basis theorem for difference-term varieties with a finite residual bound*, *Trans. Amer. Math. Soc.* **368** (2016), no. 3, 2115–2143.
81. K. A. Kearnes and Á. Szendrei, *Dualizable algebras with parallelogram terms*, *Algebra Universalis* **76** (2016), no. 4, 497–539.

82. K. A. Kearnes, E. W. Kiss and Á. Szendrei, *Growth rates of algebras III: finite solvable algebras*, *Algebra Universalis* 76 (2016), no. 2, 199–222.

Papers Accepted or Submitted for Publication:

83. K. A. Kearnes, *Extending UFDs to PIDs without adding units*, accepted for *J. Commut. Algebra*.
84. K. A. Kearnes, *Relatively congruence modular quasivarieties of modules*, accepted for *Outstanding Contributions to Logic*, Springer-Verlag.
85. K. A. Kearnes, E. W. Kiss and Á. Szendrei, *Varieties whose finitely generated members are free*, accepted for *Algebra Universalis*.
86. K. A. Kearnes and Á. Szendrei, *Cube term blockers without finiteness*, accepted for *Algebra Universalis*.
87. K. A. Kearnes and Y. Li, *Finitely generated varieties with small $\langle R, S \rangle$ -irreducible sets*, submitted.
88. K. A. Kearnes, Á. Szendrei and R. Willard, *Simpler Maltsev conditions for (weak) difference terms in locally finite varieties*, accepted for *Algebra Universalis*.

Manuscripts, Papers in Progress:

89. K. A. Kearnes, *Residual smallness relativized to types, II*, unpublished manuscript.
90. K. A. Kearnes and O. Lewis, *Categorical equivalences between pseudovarieties*, unpublished manuscript.
91. J. Berman, K. A. Kearnes and Á. Szendrei, *Free spectra of intermediate growth*, unpublished manuscript.

Conference Proceedings Edited:

1. A. Andretta, K. A. Kearnes and D. Zambella, eds., *Logic Colloquium 2004*, Proceedings of the Annual Summer Meeting of the Association for Symbolic Logic, held in Torino, Italy, July 25–31, 2004. *Lecture Notes in Logic*, **29**. Association for Symbolic Logic, Cambridge University Press, 2008. x+236 pp.
2. J. Harding, B. Kastermans, K. A. Kearnes, J. D. Monk, and Á. Szendrei, eds., *BLAST 2010*, Proceedings of the 3rd International Conference on Boolean Algebra, Lattice Theory, Universal Algebra, Set Theory and Set-Theoretical Topology, held in Boulder, CO, June 2–6, 2010. *Order* **29**, no. 2, 2012.

Other Publications:

1. K. A. Kearnes, E. W. Kiss, and Á. Szendrei, *Gauss-Egészek és Dirichlet Tétel I*, *KöMal* (Mathematics and Physics Journal for Secondary Schools), March 2010. (*A solicited expository article aimed at high school students and teachers.*)

2. K. A. Kearnes, E. W. Kiss, and Á. Szendrei, *Gauss-Egészek és Dirichlet Tétéle II*, KöMal (Mathematics and Physics Journal for Secondary Schools), April 2010. *(A solicited expository article aimed at high school students and teachers.)*