

## RESEARCH VITA

**Herman Pat Goeters**  
**Full Professor**

### EDUCATION AND TRAINING

#### Education:

- Ph.D. (1984) and M.S. (1982), Mathematics, University of Connecticut, Storrs, CT 1980-1984
- B.A. (1980), Mathematics with minors in Computer Science and Physics, Southern Connecticut State University, New Haven, CT 1975-1980
- Completed course work equaling a B.S. in computer science
- Interned as an Actuary at AFLAC in Columbus, GA.
- Passed three actuarial exams / Prepared material to take and teach material for subsequent actuarial exams.

#### Positions Held:

- Full Professor, Department of Mathematics; Auburn University, AL 1997-present
- Associate Professor, Department of Mathematics; Auburn University, AL 1993-1997
- Associate Professor, Algebra, Combinatorics, and Analysis; Auburn University, AL 1991-1993
- Actuarial Intern; AFLAC, Columbus, GA, Summer, 1992
- Assistant Professor, Algebra, Combinatorics, and Analysis; Auburn University, AL 1986-1991
- Visiting Associate Professor, Mathematics Department; Wesleyan University, Middletown, CT 1985-1986
- Assistant Professor, Mathematics Department; Fairfield University, Fairfield, CT 1984-1985
- Teaching Assistant, Mathematics Department; University of Connecticut, Storrs, CT 1980-84
- Programmer/Analyst, US Army's Concepts Analysis Agency; Bethesda, MD Summers of 81 and 82

### RESEARCH PUBLICATIONS:

- (1) "Butler Modules Over Prüfer Domains", with A. Giovannitti and W. Ullery.
- (2) "FI-Extending Hulls of Abelian Groups and Modules", with G. Berkenmeier.
- (3) "Cobalanced Submodules of Vector Modules", with A. Giovannitti, submitted.
- (4) "Precobalanced and Cobalanced Sequences of Modules Over Domains", with A. Giovannitti, to appear in Czech. J. of Mat.
- (5) "Summands of Completely Decomposable Modules", to appear in the Comm. of Alg.
- (6) "A Survey of the Generalization of Warfield Duality and Warfield's Hom-Tensor Relation to Domains", with Ulrich Albrecht, *Abelian Groups, Rings, Modules, and Homological Algebra*, Chapman & Hall/CRC, 2006.
- (7) "Balanced and Prebalanced Sequences of Modules", with A. Giovannitti, and A. Kehrein, *Communications in Algebra*, 31 (10), (2003), 4817-4829.
- (8) "A-Divisorial Matlis Domains", submitted.

- (9) “On locally isomorphic torsion-free modules”, with B. Olberding, *International Journal of Commutative Rings*, Vol. 1, Number 4, (2002), also appears in book, *Commutative Rings*, Nova Publishing, 2002.
- (10) “Butler modules and Bext”, with C. Vinsonhaler, *Rings, Modules, Algebras, and Abelian Groups*, Lecture Notes in Pure and Applied Algebra, Dekker, 2002.
- (11) “The FI-extension property for abelian groups”, with Gregoire Caligiore, Laszlo Fuchs, and Gary Berkenmeier, *Comm. in Alg.* 29(2), 673-685, (2001).
- (12) “Unique decompositions into ideals for noetherian integral domains”, with B. Olberding, *J. of Pure and Applied Math.*, 165 (2), (2002), 169-182.
- (13) “The Krull-Schmidt Property for ideals and modules over integral domains”, with B. Olberding, *Proceedings of the Second Honolulu Conference on Abelian Groups and Modules*, Rocky Mountain Journal of Math., 32 (4), (2002), 1409-1429.
- (14) “When Butler’s Theorem Holds For Modules”, *Comm. in Alg.* 33 (2005), 2827-2831.
- (15) “The structure of Ext for torsion-free modules of finite rank over Dedekind domains”, *Communications in Algebra*, 31 (10), (2003), 3251-3263.
- (16) “Butler modules over 1-dimensional noetherian domains”, *Proceedings of Abelian Groups and Modules*, Dublin, 1998, *Trends in Math.*, Birkhauser, Basel, 1999.
- (17) “A class of abelian groups characterized by the ranks of their socles”, with U. Albrecht and A. Giovannitti, *Czech. Journal of Math.*, 52 (127), (2002), 319-327.
- (18) “Pure submodules and torsion-free images of completely decomposable modules”, with U. Albrecht and A. Giovannitti, *Comm. in Algebra*, 30 (10), (2002), 4629-4640.
- (19) “A class of pure submodules of vector modules”, with U. Albrecht and A. Giovannitti, *Proceedings of Abelian Groups and Modules*, Dublin, 1998.
- (20) “Pure submodules of completely decomposable modules”, with B. Olberding submitted.
- (21) “On the multiplicative properties of submodules of the quotient field of an integral domain”, with B. Olberding, *Houston Journal of Mathematics* 26 (2), (2000), 241-254.
- (22) “Extensions of ideal-theoretic properties of a domain to submodules of its quotient field”, with B. Olberding, *Journal of Algebra* 237, 14-31 (2001).
- (23) “Locally strongly homogeneous rings and modules”, *Houston Journal of Mathematics* 27 (1), 11-33, (2001).
- (24) “Qqpi groups and quasi-equivalence”, with W. Wickless, *Proc. of the AMS.*, 126 (11), (1998), 3145-3150.
- (25) “Faithfulness and cancellation in noetherian domains”, with B. Olberding, *Rocky Mountain Journal* 30 (1), (2000), 185-194.
- (26) “Strong  $\mathcal{S}$ -groups”, with U. Albrecht, *Colloquium Mathematicum* 80 (1), (1999), 97-105.
- (27) “Noetherian Stable Domains”, *J. of Algebra* 202, (1998), 343-356.
- (28) “Quasi-balanced torsion-free groups” with W. Ullery, *Comment. Math. Univ. Carolinae* 39 (3), (1998), 431-443.
- (29) “Butler theory over Murley groups” with U. Albrecht, *J. of Algebra* 200, (1998), 118-133.
- (30) “Critical typesets of bracket groups” with W. Ullery, *Communications in Algebra* 26(11), (1998), 3541-3551.
- (31) “Duality in Noetherian integral domains”, *Rocky Mountain Journal of Mathematics* 29 (2), (1999), 519-529.
- (32) “Relative injectivity and equivalence theorems”, with W. Wickless, *Houston Journal of Mathematics* 26 (2), 223-239, (2000).
- (33) “Quasi-Isomorphism and  $Z_2$ -Representations of Butler Groups”, with C. Megibben, *Rend. Sem. Mat. Univ. Padova*, 106, (2001), 21-45 .

- (34) “Completely decomposable groups with prescribed invariants”, with W. Ullery, *Acta. Math. Hungar.* 76 (1-2), (1997), 69-80.
- (35) “The Structure of Pext For Countable Abelian Groups”, with P. Keef, *Proceedings of the AMS* 126 (5), (1998), 1321-1329.
- (36) “Subrings of a product of Dedekind domains”, *Journal of Pure and Applied Algebra* 137, (1999), 237-252.
- (37) “Maximal submodules of finitely generated modules”, with C.J. Maxson, *Riv. Mat. University de Parma* 5 (5), (1996), 77-84.
- (38) “Torsion-free duality is Warfield”, with T. Faticoni, C. Vinsonhaler, and W. Wickless, *Proceedings of the AMS* 125 (4), (1997), 961-969.
- (39) “Duality and self-reflexive torsion-free abelian groups”, *Journal of Pure and Applied Algebra* 137, (1999), 221-235.
- (40) “A generalization of quasi-pure injectivity”, with C. Vinsonhaler, and W. Wickless, *Houston Journal of Mathematics* 22(3), 1996, 473-484.
- (41) “Subalgebras of Rational Matrix Algebras”, with U. Albrecht, T. Faticoni, and W. Wickless, *Acta. Math. Hungar.*
- (42) “An Extension of Warfield Duality for Abelian Groups”, *Journal of Algebra*, 180, (1996), 848-861.
- (43) “Flatness and the Ring of Quasi-Endomorphisms”, with U. Albrecht, *Questiones Math.* 19 (1-2), (1996), 379-396.
- (44) “A note on Fuch’s problem 34”, with U. Albrecht, *Proc. of the AMS.* 124 (5), (1996), 1319-1328.
- (45) “Extensions of finitely faithful  $S$ -groups”, to appear in *Abelian Groups and Modules, Proceedings of The Colorado Conference, Marcel-dekker, 1996.*
- (46) “Number Rings and a Problem of P. Hill”, *Communications in Algebra* 23 (10), (1995), 3677-3683.
- (47) “Warfield duality and module extensions over a Noetherian integral domain”, *Abelian Groups and Modules, Kluwer Academic Publishers, 1995.*
- (48) “On Quasi-Decompositions of  $\mathcal{B}^1$ -Groups”, with W. Ullery, *Communications in Algebra*, 23 (1), (1995), 131-137.
- (49) “The flat dimension of mixed abelian groups as  $E$ -modules”, with U. Albrecht, and W. Wickless, *Rocky Mountain Journal* 25 (2), (1995), 569-590.
- (50) “Almost Flat Abelian Groups”, with U. Albrecht, *Rocky Mountain Journal* 25 (3), (1995), 827-842.
- (51) “Numerical Invariants for a class of Butler Groups”, with W. Ullery and C. Vinsonhaler, *Proceedings of Abelian Groups and Modules, Contemporary Mathematics, Vol 171, 159-172, (1995).*
- (52) “Homogeneous Groups”, *Communications in Algebra*, 23 (14), (1995), 5369-5378.
- (53) “Pure subgroups of  $A$ -projective groups”, with U. Albrecht, *Acta. Math. Hungar.* 65 (3) (1994), 217-227.
- (54) “On the Arnold-Vinsonhaler Invariants”, with W. Ullery, *Houston Journal of Math.*, 20 (1), (1994), 17-25.
- (55) “A note on coflat Abelian groups”, with U. Albrecht and T. Faticoni, *Czech. Math. J.*, 44 (119) 1994, 431-442.
- (56) “Quasi-Invariants For Torsion-Free Groups”, *Houston Journal of Mathematics*, 20(3) (1994), 381-392.

- (57) “Quasi-Decompositions of Butler Groups”, with W. Ullery, Abelian Groups, Lecture Notes in Pure and Applied Math., Vol. 146, Marcel-Dekker, 1993.
- (58) “Zero-One Matrices with An Application to Abelian Groups”, with U. Albrecht, and C. Megibben, Rend. Sem. Mat. Univ. Padova, 90, (1993), 17-24.
- (59) “Cobalanced Torsion-Free Groups”, Communications in Algebra, 21 (8), (1993), 2715-2726.
- (60) “Fuchs’ Problem 43”, Rocky Mountain Journal, 22 (1), (1992), 197-201.
- (61) “Almost Completely Decomposable Groups”, with W. Ullery, Rocky Mountain Journal, 22 (2), 593-600, (1992).
- (62) “Torsion-Free Abelian Groups with Finite Rank Endomorphism Rings”, Questiones Math., 14 (1), (1991), 111-115.
- (63) “Examples of Torsion-Free Abelian Groups Flat as Modules Over Their Endomorphism Ring”, with T. Faticoni, Communications in Algebra, 19 (1), 1-27, (1991).
- (64) “Homomorphic Images of Completely Decomposable Finite Rank Torsion-Free Groups”, with W. Ullery, Journal of Algebra, 104 (1), (1991), 1-11.
- (65) “Butler Groups and Lattices of Types”, with W. Ullery, Comment. Math. Univ. Carolinae, 31 (4), (1990), 613-619.
- (66) “When Do Two Groups Always have Isomorphic Extension Groups?”, Rocky Mountain Journal of Mathematics, 20 (1), (1990), 129-144.
- (67) “Cobalanced Exact Sequences”, with A. Giovinnitti, Commentationes Math. Univer. Carolinae, 30 (4), 637-641, (1989).
- (68) “Hyper-types of Torsion-Free Abelian Groups of Finite Rank”, with C. Vinsonhaler and W. Wickless, Australian Math. Soc. Bull., 39 No. 1, (1989), 21-24.
- (69) “A Dual to Baer’s Lemma”, with U. Albrecht, Proceedings of the AMS, 105 (4), (1989), 817-826.
- (70) “Finitely Faithful  $S$ -Groups”, Communications in Algebra, 17 (6), (1989), 1291-1302.
- (71) “Hyper- $\tau$  groups”, with W. Wickless, Communications in Algebra, 17 (6), (1989), 1275-1290.
- (72) “On the  $p$ -rank of  $\text{Hom}(A, B)$ ”, with J. Reid, Abelian Group Theory Proceedings, Contemporary Mathematics, AMS Vol. 87, (1989).
- (73) “Generating an Injective Class of Torsion-Free Abelian Groups”, Acta Mathematica Hungarica, 53 (1-2), (1989), 129-142.
- (74) “Cotorsion Theories and Generating Injective Classes”, Acta Mathematica Hungarica, 51 (1-2) (1988), 99-107.
- (75) “When is  $\text{Ext}(A, B)$  torsion-free?, and related problems”, Communications in Algebra, 16 (8), (1988), 1605-1619.
- (76) “On Torsion-Free  $\text{Ext}$ ”, with T. Faticoni, Communications in Algebra, 16 (9), (1988), 1853-1876.

Publications In Preparation:

- (1) “Modules for which the divisible hull is the injective hull over the endomorphism ring”, with T. Faticoni.
- (2) “Reid’s irreducible groups”.
- (3) “Warfield Duality Over Matlis Domains”.
- (4) “Module properties inherited by group properties”.

Books:

- (1) “Abelian Groups, Rings and Modules”, with Overtoun Jenda; Taylor-Francis - publisher (2006).
- (2) “Torsion-Free Modules Over Integral Domains”, published by VIII ECADIM (Central-American Mathematics Conference), Managua, Nicaragua, Winter 2001.
- (3) “An Introduction to Algebra”.
- (4) “Actuarial Mathematics”.

## PRESENTATIONS:

- “Modules and Torsion-Free Groups”, Southeastern Algebra Conference, Loyola University, New Orleans, April, 2002.
- “Reid’s Irreducible Groups”, Wesleyan University Conference in Algebra, April 2001, Middletown, Ct.
- “Torsion-Free Modules Over an Integral Domain”, mini-course at the VIII ECADIM (Central-American Mathematics Conference), Managua, Nicaragua, February 2001.
- “Butler modules over integral domains”, University of Connecticut, November 2000.
- “TFKS and UDI Over Noetherian Domains”, Southeastern Algebra Conference, October, 1999.
- “Unique Decompositions Into Ideals Over Noetherian Domains”, Tulane Mathematics Conference, April, 1999.
- “Homogeneous Ring Extensions of a Domain”, Special Sessions of the AMS, Commutative Rings, Wake Forest University, October, 1998.
- “Butler modules over 1-dimensional noetherian domains”, Special Sessions of the AMS, Abelian Groups and Modules, Wake Forest University, October, 1998.
- “Butler modules over 1-dimensional noetherian domains”, Southeastern Algebra Conference, USM, Hattiesburg, MS, March, 1998.
- “Locally strongly homogeneous rings and modules”, Blue/Gray Workshop, hosted by the University of Connecticut, Storrs, CT, October, 1997.
- “One dimensional Cohen-Macaulay rings and duality”, seminar, Tulane University, New Orleans, LA, April, 1997.
- “Warfield’s Hom-Tensor Relation”, Southeastern Algebra Conference, USL, Lafayette, LA, October 25<sup>th</sup> 1996
- “Three Theorems of R.B. Warfield”, AMS Special Sessions on Commutative Rings, UT, Chatanooga, TN, October, 1996
- “A Problem of P. Hill”, Southeastern Algebra Conference, Texas A & M, March, 1996
- “A Conjecture of Bass”, University of Connecticut, October 1995
- “The Fuchs-Metelli Conjecture”, Colloquium talk, University of Southern Miss, Hattiesburg, November 1995
- “Number Rings and Duality”, International Conference on Abelian Groups and Modules, University of Colorado at Colorado Springs, June, 1995
- “Relative Injectivity and Duality”, Colloquium talk, Univ. of Conn., October 1994
- “Warfield Duality for Abelian Groups”, Padova Conference an Abelian Groups and Modules, Padova, Italy, July, 1994
- “Warfield Duality”, Auburn Algebra Conference, Auburn, March 1994

- “Fuch’s Problem 34”, Southeastern Algebra Conference, U.S.L., October 1994, Lafayette, LA
- “Some Conjectures on  $\mathcal{B}^1$ -groups”, Workshop in Abelian Groups, UCONN, Storrs, CT, May 1993
- “Warfield Duality”, Southeastern Algebra Conference, Baylor University, Waco, TX, March 1993
- “ $Z_2$ -Representations of Butler Groups”, Southeastern Algebra Conference, University of Southern Mississippi, April 1992
- “Quasi-Isomorphism Invariants”, Colloquium Talk, University of Connecticut, March 1990
- “Cobalanced Torsion-Free Groups”, Southwestern Algebra Conference, University of Houston, Houston, Texas, November 1989
- Workshop on Abelian Groups, UCONN, Storrs, CT, October 1989
- “Fuchs Problem 43”, Abelian Group Theory Conference, Oberwolfach, West Germany, July 1989
- “Quasi-Invariants for Torsion-Free Groups”, First Southeastern Algebra Conference, USM, Hattiesburg, October 1988
- “On the  $p$ -Rank of  $\text{Hom}(A, B)$ ”, The Research Workshop on the Theory of Torsion-Free Abelian Groups, University of Colorado at Colorado Springs, May 1987
- “Hyper- $\tau$  Groups”, American Mathematical Society conference, San Antonio, TX, January 1987
- “When Two Groups Always Have Isomorphic Extension Groups, II”, American Mathematical Society conference, New Orleans, LA, January 1986
- “When Two Groups Always Have Isomorphic Extension Groups” Special Sessions of the AMS, Tuscon, AZ, May 1985

CONFERENCE HOSTED:

AGRAM-Abelian Groups, Rings and Modules: September 2004, with Overtoun Jenda.