Department of Mathematics
University of Arizona
Tucson, AZ 85721, USA
Website: http://math.arizona.edu/∼nhamngo/

Office: M710 Math Building
Phone: 520-621-4838
Email: nhamngo@math.arizona.edu
Citizenship: Vietnam

Employment

- University of Arizona, Tucson, AZ, USA
  - Postdoctoral Research Associate, August 2015 – Present
- University of Arizona, Tucson, AZ, USA
  - Visiting Assistant Professor, September 2014 – August 2015
- Lancaster University, Lancaster, UK
  - Senior Research Associate, September 2013 – August 2014
- University of Wisconsin-Stout, Menomonie, WI, USA
  - Lecturer of Mathematics, August 2012 – May 2013

Education

- University of Georgia, Athens, GA, USA
  - Ph.D. in Mathematics, May 2012
  - Thesis title: *Cohomology and Geometry for Frobenius Kernels of Algebraic Groups*
  - Advisor: Daniel K. Nakano
- New Mexico State University, Las Cruces, NM, USA
  - M.S. in Mathematics, May 2008
- Vietnam National University, Ho Chi Minh City, Vietnam
  - B.S. in Mathematics and Informatics, July 2004
  - Thesis title: *Some Results on the Second Cohomology Group*
  - Advisor: Dong V. Nguyen

Teaching Experience

- Postdoctoral Research Associate, University of Arizona
  - Math 445: Cryptography (Spring 2016)
  - Math 129: Calculus II (Fall 2015)
  - Math 410: Matrix Analysis (Summer 2015)
- Visiting Assistant Professor, University of Arizona
  - Math 129: Calculus II (Spring 2015)
  - Math 116: Calculus Concepts for Business (Fall 2014)
- Lecturer, University of Wisconsin-Stout
  - Math 120: Intro to College Algebra (Spring 2013)
  - Math 153: Calculus I (Spring 2013)
  - Math 120: Intro to College Algebra (Fall 2012)
  - Math 153: Calculus I (Fall 2012)

◦ Graduate Student Instructor, University of Georgia

- Math 2200: Calculus I (Spring 2012)
- Math 2200: Calculus I (Fall 2011)
- Math 2200: Calculus I (Spring 2010)
- Math 1113: Precalculus (Fall 2009)

◦ Graduate Student Instructor, New Mexico State University

- Math 121G: College Algebra (Spring 2008)
- Math 121G: College Algebra (Fall 2007)

Research Interests

- Representation Theory of Algebraic and Quantum Groups
- Lie Theory and Geometry
- Cohomology of Groups and Algebras
- Commutative Algebra (with an algebraic geometry viewpoint)
- Computational Algebra

Publications and submitted papers

1. *Cohomology for infinitesimal unipotent algebraic and quantum groups*, Transform. Groups. **17** (2012), 393–416 (joint with D. Nakano and C. Drupieski).
2. *Second cohomology for finite groups of Lie type*, J. Algebra **360** (2012), 21–52 (joint with the UGA VIGRE Algebra Group).
3. *Cohomology and Geometry for Frobenius Kernels of Algebraic Groups*, PhD thesis, University of Georgia, 2012, available at http://math.arizona.edu/ nhamngo/Thesis.pdf
4. *First cohomology for finite groups of Lie type: simple modules with small dominant weights*, Trans. Amer. Math. Soc. **365** (2013), 1025–1050 (joint with the UGA VIGRE Algebra Group).
5. *Cohomology for Frobenius kernels of SL_2*, J. Algebra **396** (2013), 39–60.
6. *Commuting varieties of r-tuples over Lie algebras*, J. Pure Appl. Algebra **218** (2014), 1400–1417.
7. *On varieties of commuting nilpotent matrices*, Linear Algebra and its Applications **452** (2014), 237–262 (joint with K. Šivic).
8. *On nilpotent commuting varieties and cohomology of Frobenius kernels*, J. Algebra **425** (2015), 65–84.
9. *Cohomology of SL_2 and related structures*, , submitted (joint with K. Lux and Y. Zhang). http://arxiv.org/pdf/1508.05534v1.pdf
10. *Rational singularities of G-saturation*, submitted http://arxiv.org/abs/1309.7481.

Preprints

1. *Reducibility of nilpotent commuting varieties*, preprint (joint with R. Guralnick)[1]. available at http://arxiv.org/pdf/1308.2420.pdf

[1]It is not going to be submitted for publication as most of the results were joint with work of K. Šivic in the paper "On varieties of commuting nilpotent matrices", listed as #7 above.

2. *Mixed commuting varieties over simple Lie algebras*,
available at http://arxiv.org/pdf/1301.2712v4.pdf

In preparation (preprints available upon request)

1. *Geometry of the second Frobenius kernels*, joint with P. Levy.
2. *Dimension of commuting varieties*, joint with P. Levy and K. Šivic.

Software Development

In collaboration with Jon F. Carlson, I wrote a package of computer programs on Representation Theory, for computing the radical and socle layers of a given finite-dimensional module, and for classifying the simple submodules in each layer. This package was already implemented in MAGMA. I wrote a function which calculates the basic algebra for the first Frobenius kernel of the unipotent subgroup of Type A, and then computes the cohomology ring of that basic algebra. In my dissertation, I also created a program in MAGMA to compute character multiplicities in the cohomology module for the r-th Frobenius kernel of the Borel subgroup of SL_2.

Conference and Seminar Talks

- 2016 AMS Southeastern Sectional Meeting, University of Georgia, GA March 5-6, 2016:
Cohomology of SL_2 and related structures
- AMS special session on "Geometric and categorical methods in representation theory" at the Joint Mathematics Meetings in Seattle, Washington, Jan 08, 2016:
On nilpotent commuting varieties and cohomology of Frobenius kernels
- Algebra/Number Theory Seminar, University of Arizona, Tucson, AZ, Nov 17, 2015:
On a connection between Frobenius kernels and finite Chevalley groups
- Algebra/Number Theory Seminar, University of Arizona, Tucson, AZ, Apr 14, 2015:
Cohomology of Weyl modules over SL_2
- Algebra/Number Theory Seminar, University of Arizona, Tucson, AZ, Dec 2, 2014:
Commutative algebra properties of nilpotent commuting varieties
- Algebra/Number Theory Seminar, University of Arizona, Tucson, AZ, Sep 16, 2014:
Cohomology theory of Frobenius kernels
- Pure Maths Seminar, Lancaster University, Lancaster, UK, Feb 26, 2014:
On the cohomology ring of Frobenius kernels
- Algebra Seminar, University of Manchester, Manchester, UK, Feb 11, 2014:
On the cohomology ring of Frobenius kernels
- 2013 Spring Eastern Sectional Meeting, Boston College, MA April 6-7:
Nilpotent Commuting Varieties
- Mathematics Colloquium, University of South Alabama, March 21, 2013:
Nilpotent Commuting Varieties
- 2012 Spring AMS Southeastern Section Meeting, University of South Florida, FL March 10-11:
Commuting Varieties and Cohomology of Frobenius Kernels
- Algebra Seminar, University of Georgia, December 05, 2011:
Nice Properties of Commuting Varieties

- VIGRE Seminar, University of Georgia, Fall 2011:
Barvinok's Algorithm for Counting Integral Points in a Polytope
- 2011 Fall AMS Central Section Meeting, University of Nebraska-Lincoln, NE October 14-16:
Cohomology for Infinitesimal Unipotent Algebraic and Quantum Groups
- Algebra Seminar, University of Georgia, Fall 2011:
Computing Algebraic Structures with MAGMA
- Algebra Seminar, University of Natural Sciences, Ho Chi Minh City, July 24, 2011:
Cohomology for Frobenius Kernels of Algebraic Groups
- Invited Talk in the Teaching Seminar, University of Georgia, Fall 2010:
Teaching Experiences as an International TA
- Mock AMS conference, University of Georgia, Summer 2010:
Cohomology for Infinitesimal Unipotent Algebraic and Quantum Groups
- VIGRE Seminar, University of Georgia, Summer 2009:
Integral Distances in a Circle
- Algebra Seminar, University of Georgia, Spring 2009:
Some Results on the Second Cohomology Group
- Sciences Conference at University of Natural Sciences, Ho Chi Minh City, October 2004:
Some Results on the Second Cohomology Group

Conferences and Workshops Attended

- 38th ARTIN Meeting, University of Aberdeen, 11-13 November, 2013
- Sixty-third BLOC meeting, Mathematical Institute, Oxford, 17-18 October 2013
- New Instructor Workshop, University of Wisconsin-Stout, August 14-16, 2012
- Seattle Summer π-School and Workshop on Cohomology and Support in Representation Theory, August 2012
- Interactions between Commutative Algebra and Representation Theory, Syracuse University, April 2012
- Southeastern Lie Theory Workshop on Algebraic and Finite Groups, University of Virginia, June 2011
- 2011 Joint Mathematics Meetings AMS/MAA, New Orleans, LA, January 6-9, 2011
- Southeastern Lie Theory Conference on Homological Methods in Representation Theory, University of Georgia, May 2010
- VIGRE Summer School on Lie and Representation Theory, University of Georgia, May 2010
- Southeastern Lie Theory Workshop on Combinatorial Lie Theory and Applications, North Carolina State University, October 2009

Grants, Honors, and Awards

- EPSRC Grant on the project "Varieties of modules and representations of Frobenius kernels of reductive groups" (with Paul Levy)
- AMS Graduate Student Travel Grant, March 2012
- AMS Graduate Student Travel Grant, October 2011

- Graduate Assistant Award 2010-2011, Department of Mathematics, University of Georgia
- Outstanding Graduate Student Award for 2007-2008, Department of Mathematical Sciences, New Mexico State University

Professional Service

- Committee member of Daniel Rossi's comprehensive exam
- Co-organizer of Southwestern Group Theory Day, University of Arizona, March 21, 2015
- Peer-referee for the *Journal of Algebra*, *Linear Algebra and its Applications*, *Journal of Lie Theory*
- Reviewed papers for AMS Math Reviews (2014–present)
- VIGRE Graduate Student Seminar Co-organizer, University of Georgia, Fall 2011

References

- Daniel K. Nakano, Distinguished Research Professor of Mathematics (Ph.D. Thesis Advisor)
  Department of Mathematics, University of Georgia, Athens, Georgia, 30602-7403, USA
  Email: nakano@math.uga.edu – Phone: 706-542-2576
- Pham Huu Tiep, Professor of Mathematics
  Department of Mathematics, University of Arizona, Tucson, Arizona 85721-0089, USA
  Email: tiep@math.arizona.edu – Phone: 520-626-2748
- Klaus Lux, Professor of Mathematics
  Department of Mathematics, University of Arizona, Tucson, Arizona 85721-0089, USA
  Email: klux@math.arizona.edu – Phone: 520-621-6856
- Anthony Iarrobino, Professor of Mathematics
  Department of Mathematics, Northeastern University, Boston, MA 02115, USA
  Email: a.iarrobino@neu.edu
- Christopher Bendel, Department Chair
  Department of Mathematics, Statistics and Computer Science
  University of Wisconsin-Stout, Menomonie, Wisconsin 54751, USA
  Email: bendelc@uwstout.edu – Phone: 715-232-2682
- Robert Indik (teaching), Associate Professor–Associate Head for Instruction
  Department of Mathematics, University of Arizona, Tucson, Arizona 85721-0089, USA
  Email: indik@math.arizona.edu – Phone: 520-621-4599