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YOJI YOSHII
CURRICULUM VITAE

Address: Department of Mathematics, North Dakota State University,
300 Minard Hall, Fargo, North Dakota, 58105-5075, USA,
Telephone: (701) 231-6471, Fax: (701) 231-7598
E-mail: yoji.yoshii@ndsu.nodak.edu
URL: <http://www.ndsu.nodak.edu/ndsu/yoshii/>

Citizenship: Japanese, Permanent residence in Canada

Research Interest: Lie algebras and non-associative algebras

Education:

1999: Ph.D Mathematics, University of Ottawa

Thesis: "The coordinate algebra of extended affine Lie algebras of type A_1 "

Supervisor: Professor Erhard Neher

1993: M. Sc. Mathematics, University of Alberta

Thesis: "A survey of Kazhdan-Lusztig conjectures"

Supervisor: Professor Robert Moody

1985: M. Sc. Mathematics Education, University of Tsukuba

Thesis: "Universal central extensions of Chevalley algebras over the algebra
of Laurent polynomials in n -variables"

Thesis: "A teaching method of linear transformations on the plane in High School"

Supervisor: Professor Eiichi Abe

1982: B. Sc. Mathematics, Gakushuin University

Supervisor: Professor Kazuo Akao

Employment:

1) 1985 - 1991: High School Teacher, Komaba School attached to University of Tsukuba

2) 1992 - 1993: Teaching Assistant, University of Alberta

3) 1994 - 1999: Teaching Assistant, University of Ottawa

4) September 1999 - August 2000: Postdoctoral Fellow, University of Ottawa

5) September 2000 - December 2000: Fields Institute Postdoctoral Fellow, Fields Institute

6) 2001: PIMS Postdoctoral Fellow, University of Alberta

7) 2002 - June 2002: NSERC Postdoctoral Fellow, University of Alberta

8) July 2002 - August 2003: NSERC Postdoctoral Fellow, University of Wisconsin-Madison

9) September 2003 - July 2004: Assistant Professor, University of Saskatchewan

10) August 2004 - 2006: Assistant Professor, North Dakota State University

Award: Thesis prize 1999 for the best Ph.D thesis of the Ottawa-Carleton Institute of Mathematics and Statistics

Publications:

1) Published papers:

- [1] *Jordan tori*, Math. Reports Acad. Sci. Canada, **18**(4) (1996), 153–158.
- [2] *Coordinate algebras of extended affine Lie algebras of type A_1* , J. Algebra **234** (2000), 128–168
- [3] *Root-graded Lie algebras with compatible grading*, Comm. Algebra **29** (2001), 3365–3391.
- [4] *Classification of division \mathbb{Z}^n -graded alternative algebras*, J. Algebra **256** (2002), 28–50.
- [5] *Classification of quantum tori with involution*, Canad. Math. Bull. **45**(4) (2002), 711–731
- [6] *Some factorizations in universal enveloping algebras of three dimensional Lie algebras and generalizations* (with S. Berman and J. Morita), Canad. Math. Bull. **45**(4) (2002), 525–536
- [7] *Derivations and invariant forms of alternative or Jordan G -tori* (with E. Nher), Trans. Amer. Math. Soc. **355**(3) (2002), 1079–1108.
- [8] *Structurable tori and extended affine Lie algebras of type BC_1* (with B. Allison), Pure Appl. Algebra **184**(2-3) (2003), 105–138.
- [9] *Root systems extended by an abelian group and their Lie algebras*, J. Lie Theory **14** (2004), no. 2, 371–394.
- [10] *Locally extended affine Lie algebras* (with J. Morita), J. Algebra **301** (2006), 59–81.

2) Conference Proceedings:

- [11] *Jordan analogue of Laurent Polynomial Algebra*, Proceedings of International Conference on Jordan Structures in Malaga Spain (1997), 191–197.
- [12] *Lie G -tori*, Proceedings of the 19th Summer Seminar on Lie algebras and related topics in Kyushu Japan (2003), 22–25.
- [13] *Lie tori of rank 1* (with B. Allison and J. Faulkner), RESENHAS IME-USP, Vol. 6, No. 2/3 (2004), 99–109.

3) Accepted paper:

[14] *Lie tori – A simple characterization of extended affine Lie algebras*, RIMS., Kyoto Univ.

[15] *Lie G -tori of symplectic type* (with G. Benkart), Quarterly Journal.

4) Submitted paper:

[16] *Cayley polynomials*.

5) Preprint:

[17] *Structurable tori* (with B. Allison and J. Faulkner).

Invited Talks:

1) “Extended affine Lie algebras of type A_1 and Jordan tori”, International Conference on Jordan Structures, Malaga Spain, June 1997.

2) “Jordan tori”, AMS Meeting, Washington D.C., January 2000.

3) “Division (Δ, G) -graded Lie algebras”, Conference on Jordan-Algebras, Oberwolfach Germany, August 2000.

4) “A simple characterization of the core of an extended affine Lie algebra”, CMS meeting, Saskatoon, June 2001.

5) “A simple characterization of the core of an extended affine Lie algebra”, International Conference of Algebra, Beijing China, June 2001.

6) “Root systems extended by an abelian group G and Lie G -tori”, CMS meeting, Toronto, December 2001.

7) “Lie tori and structurable tori”, CMS meeting, Ottawa, December 2002.

8) “Recent progress for Lie G -tori”, Workshop and Conference, Fields Institute, Toronto, July 2003.

9) “Lie G -tori”, 19th Summer Seminar on Lie algebras and related topics, Kyushu, Japan, August 2003

10) “Structurable tori”, AMS meeting, Phoenix, Arizona, January 2004

11) “Introduction of new polynomials”, Colloquium, University of Virginia, February 2004

12) “New examples of EALAs and LEALAs”, International Conference on infinite dimensional Lie algebras, Beijing, China, July 2004

13) “Seligman’s Lie algebras and Lie tori”, Workshop on Lie theory, Osaka University, Japan, July 2005

14) “Locally extended affine Lie algebras”, Workshop on Jordan Algebras and related fields, University of Ottawa, Ottawa, September 2005

15) “Extended affine root systems and their Lie algebras”, Colloquium, University of Regina, January 2006

Referee Experience: Comm. Algebra, J. Pure and Applied Algebra, Canad. Math. Bull., Rocky Mountain J. Math.

Organizing Conference: Workshop on Nonassociative Algebras, Fields Institute, Toronto, May 2005

Teaching Experience

1998: Math 3344, Discrete Mathematics, Graph Theory, University of Ottawa.
 2000: Math 3143, Ring Theory and Applications, University of Ottawa.
 2001: Math 125, Linear algebra and its applications, University of Alberta.
 2002: Math 120, Linear algebra and its applications, University of Alberta.
 2003: Math 223, Calculus III for engineering, University of Saskatchewan.
 2003: Math 273, Vector Calculus, University of Saskatchewan.
 2004: Math 124, Calculus II for engineering, University of Saskatchewan.
 2004: Math 116, Calculus II, University of Saskatchewan.
 2004: Math 110, Calculus I, University of Saskatchewan.
 2004: Math 265, Calculus III, North Dakota State University, 4 sections.
 2005: Math 166, Calculus II, North Dakota State University, 4 sections.
 2005 Math 265, Calculus III, North Dakota State University.
 2005 Help Session for Actuarial Science, North Dakota State University.
 2005 Math 265, Calculus III, North Dakota State University, 4 sections.
 2006 Math 259, Calculus III, North Dakota State University.
 2006 Math 266, Differential equations, North Dakota State University.

References

- 1) Professor Bruce N. Allison,
 Department of Mathematical and Statistical Sciences, University of Alberta,
 Edmonton, Alberta, T6G 2G1 Canada
 Phone: (780) 492-3001, Fax: (780) 492-6826, E-mail: ballison@math.ualberta.ca
- 2) Professor Georgia Benkart,
 Department of Mathematics, University of Wisconsin,
 Madison, Wisconsin, 53706 USA
 Phone: (608) 262-3734, Fax: (608) 263-8891, E-mail: benkart@math.wisc.edu
- 3) Professor John R. Faulkner,
 Department of Mathematics, University of Virginia,
 Charlottesville, Virginia, 22903 USA
 Phone: (434) 924-4942, Fax: (434) 982-3084, E-mail: jrf@virginia.edu
- 4) Professor Erhard Neher,
 Department of Mathematics and Statistics, University of Ottawa,
 Ottawa, Ontario, K1N 6N5 Canada
 Phone: (613) 562-5800 ext. 3516, Fax: (613) 562-5776, E-mail: neher@uottawa.ca
- 5) Professor Abraham A. Ungar,
 Department of Mathematics, North Dakota State University,
 Fargo, ND 58105 USA
 Phone: (701) 231-8187, Fax: (701) 231 7598, E-mail: Abraham.Ungar@ndsu.edu