Curriculum Vitae and List of Publications 12 March 2017

Prof. Amnon Yekutieli

Personal Details

Born: 21 August 1959 in Israel
Family status: single
Military service: 1977-1981

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Education

B.Sc. in Mathematics (1981-1984), The Hebrew University, Israel.

M.Sc. in Mathematics (1984-1986), The Hebrew University, Israel. Thesis: "Rationality of Invariant Fields," advisor: S.A. Amitsur

Ph.D. in Mathematics (1986-1990), Massachusetts Institute of Technology, USA. Thesis: "The Residue Complex and Duality for some Noncommutative Rings," advisor: M. Artin.

Employment

2007 - present	Professor, Ben Gurion University, Israel.
2002 - 2007	Associate Professor, Ben Gurion University, Israel.
1999 - 2002	Senior Lecturer, Ben Gurion University, Israel.
1993 - 1999	Senior Scientist, Weizmann Institute, Israel.
1991 - 1993	Post-doctoral Fellow, Weizmann Institute, Israel.
1990 - 1991	Instructor, University of Texas at Austin, USA (a 3 year appointment).

Visiting Positions

August 2005	Visiting Scholar, University of Washington, USA (1 month).
April 2004	Visiting Professor, Université Denis Diderot (Paris 7), Paris (1 month).
2003 - 2004	Visiting Scholar, University of Washington, USA (12 months, sabbatical leave from BGU).
1998	Visiting Lecturer, University of Washington, USA (6 months, sabbatical leave from Weizmann).
1998	Visiting Scholar, MIT, USA (6 months, sabbatical leave from Weizmann).
February 1997	Visiting Professor, Université Joseph Fourier, Grenoble (1 month).

Fellowships

1993 - 1996	Alon Fellowship for Outstanding Junior Faculty, Israel
1991 - 1993	Wolf Foundation Postdoctoral Fellowship, Israel
1988 - 1990	Research Assistantship, MIT, USA

Research Grants

(1) *US-Israel Binational Science Foundation* (BSF) Research Grant "Geometric Methods in Ring Theory." Principal investigators: A. Yekutieli (Israel) and M. Artin, C. Ingalls and J.J. Zhang (US). Grant period 1995-2000.

(2) *US-Israel Binational Science Foundation* (BSF) Research Grant "Noncommutative Algebraic Geometry and Applications." Principal investigators: M. Cohen and A. Yekutieli (Israel) and M. Artin and J.J. Zhang (US). Grant period 2001-2005.

(3) *US-Israel Binational Science Foundation* (BSF) Research Grant "Noncommutative Algebraic Geometry and Related Areas." Principal investigators: A. Yekutieli (Israel) and M. Artin and J.J. Zhang (US). Grant period 2005-2009.

(4) *Israel Science Foundation* (ISF) Research Grant "Algebraic Aspects of Deformation Quantization". Principal investigator: A. Yekutieli. Grant period 2008-2012.

(5) *Israel Science Foundation* (ISF) Research Grant "Rigid Dualizing complexes in Noncommtuative and Derived Algebraic Geometry". Principal investigator: A. Yekutieli. Grant period 2013-2018.

Synopsis of Research

My work is in four major areas of mathematics: *algebraic geometry*, *derived categories*, *ring theory* and *deformation quantization*. Detailed summaries are available online at
`http://www.math.bgu.ac.il/~amyekut/CV/cv.html`

Educational Activities

1999 - present	Ben Gurion University.
	Undergraduate courses: Linear Algebra, Algebra 3, Calculus. Wrote "Introduction to Linear Algebra", a textbook in Hebrew.
	Graduate courses: Introduction to Algebraic Geometry, Advanced Algebra, Algebraic Topology, Commutative and Homological Algebra.
	Advanced Graduate courses: Algebraic Geometry – Schemes, Derived Categories (book in preparation), reading courses on algebraic stacks.
1997 - 1998	University of Washington.
	Undergraduate courses: Linear Algebra, Differential Equations.
1991 - 1998	Weizmann Institute.
	Graduate courses: Commutative Algebra, Algebraic Geometry, Algebraic Groups.
1990 - 1991	University of Texas at Austin.
	Undergraduate courses: Calculus, Algebra.
1986 - 1990	MIT.
	Undergraduate courses: Discrete Mathematics, Linear Algebra, Partial Differential Equations.

Research Students

Doctoral students

(1) Liran Shaul. Finished Ph.D. July 2012; awarded Friedman Prize for best Ph.D. thesis. Post-doc at Weizmann Inst. 2012-14, post-doc at Univ. Antwerp 2015-2016, post-doc at Univ. Bielefeld 2016-present.

Post Doctoral Students

(1) Dr. Frederick Leitner, 2005-7. Ph.D. from Univ. Arizona.
(2) Dr. Marco Porta, 2010-12. Ph.D. from Univ. Paris 7.
(3) Dr. Matan Prezma, 2012-13. Ph.D. from Hebrew Univ.
(4) Dr. Rishi Vyas, 2013-17. Ph.D. from Cambridge Univ.
(5) Dr. Sefi Ladkani, 2014-15. Ph.D. from Hebrew Univ.
(6) Dr. William Woods, 2016-17. Ph.D. from Oxford Univ.

Professional Activities

Professional Functions inside Universities

Co-organizer, Number Theory and Algebraic Geometry Seminar, Ben Gurion University, 2005 - 2008 and 2013-14.

Referee and committee member of Ph.D. and Ms.C. theses, in Israel and abroad.

Chairman, Undergraduate Teaching Committee, Department of Mathematics, Ben Gurion University, 2002-3.

Library Coordinator for the Department of Mathematics, Ben Gurion University, 1999 - 2002.

Chairman, Undergraduate Tutoring Committee, Department of Mathematics, Ben Gurion University, 2000 - 2002.

Member, University Library Committee, 2007-8.

Professional Functions outside Universities

Treasurer, Israel Mathematical Union, 1994 - 1996.

Organizer of Algebraic Geometry Section, Israel Mathematical Union Annual Meeting, 1999.

Member, Local Organizing Committee, Europroj 99 Conference, September 1999.

Member, Organizing Committee, Amitsur Symposium in Algebra, June 2001.

Reviewer, Mathematical Reviews.

Referee of research grants: NSF and NSA grants (USA), ISF grants (Israel).

Referee for journals: Compositio Math., J. Algebra, J. London Math. Soc., Ann. Sci. Éc. Norm. Sup., Comm. Algebra, Israel J. Math., Algebr. Represent. Theory, Memoirs AMS, Contemp. Math., J. AMS, Ann. Inst. Fourier, Invent. Math., Trans. AMS, and more.

Scientific Publications

Chapters in Conference Proceedings

(1) A. Yekutieli, On Adelic Chern forms and the Bott residue formula, in "Parameter Spaces," Ed. P. Pragacz, *Banach Center Publ.* **36**, Warsaw, 1996, 217-222.

(2) A. Yekutieli, The derived Picard group and representations of quivers, in "Proceedings of the 32nd Symposium on Ring Theory and Representation Theory," Ed. J. Miyachi, Tokyo, 2000, 107-112.

(3) A. Yekutieli, The Continuous Hochschild Cochain Complex of a Scheme (Survey), pp. 227-233 in: "Topics in Algebraic and Noncommutative Geometry," special issue in memory of Ruth Michler, *Contemp. Math.* **324**, Amer. Math. Soc. 2003.

(4) A. Yekutieli, Rigid Dualizing Complexes via Differential Graded Algebras (Survey), in "Triangulated Categories", *London Math. Soc. Lecture Note Series* **375**, 2010.

(5) A. Yekutieli, Twisted Deformation Quantization of Algebraic Varieties (Survey), in: "New Trends in Noncommutative Algebra", Contemp. Math. **562** (2012), pp. 279-297.

(6) A. Yekutieli, Inroduction to Derived Categories (Lecture Notes), in "Commutative Algebra and Noncommutative Algebraic Geometry, I", MSRI Publications **67**, 2015.

Refereed Articles in Journals

(1) A. Yekutieli, Dualizing complexes over noncommutative graded algebras, *J. Algebra* **153** (1992), 41-84.

(2) A. Yekutieli, "An Explicit Construction of the Grothendieck Residue Complex," (with an appendix by P. Sastry), *Astérisque* **208** (1992), 1-115 (complete volume).

(3) A. Yekutieli, Canonical deformations of De Rham complexes, *Advances in Math.* **115** (1995), 250-268.

(4) P. Sastry and A. Yekutieli, On residue complexes, dualizing sheaves and local cohomology modules, *Israel J. Math.* **90** (1995), 325-348.

(5) A. Yekutieli, Traces and differential operators over Beilinson completion algebras, *Compositio Math.* **99** (1995), 59-97.

(6) R. Hübl and A. Yekutieli, Adeles and differential forms, *J. reine angew. Math.* **471** (1996), 1-22.

(7) A. Yekutieli, The residue complex of a noncommutative graded algebra, *J. Algebra* **186** (1996), 522-543.

(8) A. Yekutieli, Some remarks on Beilinson adeles, *Proc. Amer. Math. Soc.* **124** (1996), 3613-3618.

(9) A. Yekutieli and J.J. Zhang, Serre duality for noncommutative projective schemes, *Proc. Amer. Math. Soc.* **125** (1997), 697-707.

(10) A. Yekutieli, Residues and differential operators on schemes, *Duke Math. J.* **95** (1998), 305-341.

(11) A. Yekutieli, Smooth formal embeddings and the residue complex, *Canadian J. Math.* **50** (1998), 863-896.

(12) R. Hübl and A. Yekutieli, Adelic Chern forms and applications, *Amer. J. Math.* **121** (1999), 797-839.

(13) A. Yekutieli, Dualizing complexes, Morita equivalence and the derived Picard group of a ring, *J. London Math. Soc.* **60** (1999), 723-746.

(14) A. Yekutieli and J.J. Zhang, Rings with Auslander dualizing complexes, *J. Algebra* **213** (1999), 1-51.

(15) A. Yekutieli, The rigid dualizing complex of a universal enveloping algebra, *J. Pure Appl. Algebra* **150** (2000), 85-93.

(16) J. Miyachi and A. Yekutieli, Derived Picard groups of finite dimensional hereditary algebras, *Compositio Math.* **129** (2001), 341-368.

(17) A. Yekutieli and J.J. Zhang, Dualizing complexes and tilting complexes over simple rings, *J. Algebra* **256** (2002), 556-567.

(18) A. Yekutieli, The Continuous Hochschild Cochain Complex of a Scheme, *Canadian J. Math.* **54** (2002), 1319-1337.

(19) A. Yekutieli, The Action of Adeles on the Residue Complex, in: special issue in honor of Steven Kleiman, *Comm. Algebra* **31** (2003), no. 8, 4131-4151.

(20) A. Yekutieli and J.J. Zhang, Residue Complexes over Noncommutative Rings, *J. Algebra* **259** (2003), 451-493.

(21) A. Yekutieli, The derived Picard group is a locally algebraic group, *Algebr. Represent. Theory* **7** (2004), no. 1, 53-57.

(22) A. Yekutieli and J.J. Zhang, Multiplicities of Indecomposable Injectives, *J. London Math. Soc.* (2) **71** (2005), 100-120.

(23) A. Yekutieli, On the Structure of Behaviors, *Linear Algebra Appl.* **392** (2004), 159-181.

(24) A. Yekutieli and J.J. Zhang, Dualizing Complexes and Perverse Modules over Differential Algebras, *Compositio Math.* **141** (2005), 620-654.

(25) A. Yekutieli and J.J. Zhang, Homological Transcendence Degree, 31 pages, *Proc. London Math. Soc.* (2006) **93**, no. 1, 105-137.

(26) A. Yekutieli, Deformation Quantization in Algebraic Geometry, *Advances Math.* **198** (2005), 383-432. Erratum: *Advances Math.* **217** (2008), 2897-2906.

(27) A. Yekutieli, Continuous and Twisted L-infinity Morphisms, *J. Pure Appl. Algebra* **207** (2006), 575-606.

(28) A. Yekutieli, An Averaging Process for Unipotent Group Actions, *Representation Theory* **10** (2006), 147-157.

(29) A. Yekutieli and J.J. Zhang, Dualizing Complexes and Perverse Sheaves on Noncommutative Ringed Schemes, *Selecta Math.* **12** (2006), 137-177.

(30) A. Yekutieli, Mixed Resolutions and Simplicial Sections, *Israel J. Math.* **162** (2007), 1-27.

(31) A. Yekutieli and J.J. Zhang, Rigid Complexes via DG Algebras, *Trans. Amer. Math. Soc.* **360** no. 6 (2008), 3211-3248.

(32) A. Yekutieli and J.J. Zhang, Rigid Dualizing Complexes over Commutative Rings, *Algebr. Represent. Theory* **12**, Number 1 (2009), 19-52.

(33) A. Yekutieli, Central Extensions of Gerbes, *Advances Math.* **225**, Issue 1 (2010), 445-486.

(34) A. Yekutieli, Derived Equivalences Between Associative Deformations, *J. Pure Applied Algebra* **214** (2010), 1469-1476.

(35) A. Yekutieli, On Flatness and Completion for Infinitely Generated Modules over Noetherian Rings, *Comm. Algebra* **39:11** (2011), 4221-4245.

(36) A. Yekutieli, MC Elements in Pronilpotent DG Lie Algebras, *J. Pure Appl. Algebra* **216** (2012), 2338-2360.

(37) A. Yekutieli, Deformations of Affine Varieties and the Deligne Crossed Groupoid, *Journal of Algebra* **382** (2013), 115-143.

(38) M. Porta, L. Shaul and A. Yekutieli, On the Homology of Completion and Torsion, *Algebras and Repesentation Theory* **17** (2014), 31-67.

(39) M. Porta, L. Shaul and A. Yekutieli, Completion by Derived Double Centralizer, *Algebras and Representation Theory* **17** (2014), 481-494.

(40) A. Yekutieli, Twisted Deformation Quantization of Algebraic Varieties, *Advances in Mathamatics* **268** no. 2 (2015), 241-305.

(41) M. Porta, L. Shaul and A. Yekutieli, Cohomologically Cofinite Complexes, *Communications in Algebra* **43** (2015), 597-615.

(42) A. Yekutieli, A Separated Cohomologically Complete Module is Complete, *Communications in Algebra* **43** (2015), 616-622.

(43) A. Yekutieli, Combinatorial Descent Data for Gerbes, *J. Noncommutative Geometry* **8**, Issue 4 (2014), 1083-1099.

(44) A. Yekutieli, "Nonabelian Multiplicative Integration on Surfaces" (book), World Scientific, 2015.

(45) A. Yekutieli, Local Beilinson-Tate Operators, *Algebra and Number Theory* **9** (2015), 173-224.

(46) A. Yekutieli, The Squaring Operation for Commutative DG Rings, *Journal of Algebra* **449** (2016), 50-107.

Preprints

(1) A. Yekutieli, "An Introduction to Linear Algebra", a textbook in Hebrew, available online at `http://www.math.bgu.ac.il/~amyekut/book/book.pdf`. (Not submitted for publication.)

(2) A. Yekutieli, "A Course on Derived Categories", eprint arXiv:1206.6632. (Not submitted for publication.)

(3) A. Yekutieli, Duality and Tilting for Commutative DG Rings, eprint arXiv:1312.6411. (Not submitted for publication.)

(4) A. Yekutieli, "Derived Categories" (book), first part: arXiv:1610.09640. To be published by Cambridge University Press.

(5) A. Yekutieli, Another Proof of a Theorem of Van den Bergh about Graded-Injective Modules, eprint arXiv:1407.5916. (Not submitted for publication.)

(6) A. Yekutieli, Flatness and Completion Revisited, eprint arxiv:1606.01832. (Submitted.)

(7) R. Vyas and A. Yekutieli, Weak Proregularity, Weak Stability, and the Noncommutative MGM Equivalence, eprint arXiv:1608.03543. (Submitted.)

(8) A. Yekutieli, The Derived Category of Sheaves of Commutative DG Rings (Preview), eprint arXiv:1608.04265. (Not submitted.)

Articles in Preparation

(1) A. Yekutieli, Derived Categories of Bimodules, in preparation.

(2) A. Yekutieli, Rigidity, Residues and Duality for Commutative Rings, in preparation.

(3) A. Yekutieli, Rigidity, Residues and Duality for Schemes, in preparation.

(4) A. Yekutieli, Rigidity, Residues and Duality for Deligne-Mumford Stacks, in preparation.

(5) R. Vyas and A. Yekutieli, Dualizing complexes in the Noncommutative Arithmetic Setting, in preparation.

Lectures

Invited Lectures at Conferences (*recent only*)

- Non-commutative, derived and homotopical methods in geometry, Antwerp, September 2016. Talk: "Weak Proregularity, Weak Stability, and the Noncommutative MGM Equivalence".
- Bridges between Noncommutative Algebra and Algebraic Geometry, Banff, Canada, September 2016. Talk: "Weak Proregularity, Weak Stability, and the Noncommutative MGM Equivalence".
- Mini-Workshop on Triangulated Categories and Geometry, Bielefeld, Germany, March 2016. Talk: "Derived Categories of Bimodules".
- DG-enhancements and Higher Category Methods, Warwick UK, December 2014. Talk:"Duality and tilting for commutative DG rings".
- Higher Structures in Number Theory, Nottingham UK, July 2014. Talk: "High Dimensional Topological Local Fields and Residues".
- Higher Structures in Algebraic Analysis, Padova, February 2014. Talk: "Residues and Duality for Schemes and Stacks".
- Algebraic Analysis and Geometry, Padova, September 2013. Talk: "Twisted Deformation Quantization of Algebraic Varieties"
- Noncommtuative Algebra, Manchester, August 2012. Talk: "Higher Descent".
- The Legacy of Deformation Quantization, Ascona, June 2011. Talk: "The Reduced Deligne Groupoid".
- Triangulated Categories, Banff, June 2011. Talk: "Cohomologically Complete Complexes."
- Noncommtuative Algebra, Manchester, August 2009. Talk: "Categories with Inner Gauge Groups".
- Flato Memorial Meeting, Sde Boker, October 2008. Talk: "Twisted Deformation Quantization of Algebraic Varieties".
- Algebraic and Geometric Deformation Spaces, Bonn, August 2008. Talk: "Twisted Deformation Quantization of Algebraic Varieties".
- Workshop on Derived Categories, Barcelona, November 2007. Talk: "Perverse coherent sheaves and rigid dualizing complexes on schemes".
- Hochschild Cohomology of Algebras: Structure and Applications, Banff, Canada, Septermber 2007. Talk: "Twisted Deformation Quantization of Algebraic Varieties".
- Geometry and Lie theory, Canberra and Sydney, Australia, July 2007. Talk: "Twisted Deformation Quantization of Algebraic Varieties".
- Israel Math. Union Conference, Be'er Sheva, May 2007. Plenary talk: "Algebraic Aspects of Deformation Quantization".

Seminars at Universities (*recent only*)

- Institut Henri Poincaré, Paris, Algebra Seminar, February 2017. Talk: "Weak Proregularity, Weak Stability, and the Noncommutative MGM Equivalence".
- MIT Infinite Dimensional Algebra Seminar, February 2017. Talk: "Weak Proregularity, Weak Stability, and the Noncommutative MGM Equivalence".
- Tel Aviv University Algebraic Geometry Seminar, December 2016. Talk: "The Derived Category of Sheaves of Commutative DG Rings".
- Hebrew University Number Theory and Algebraic Geometry Seminar, December 2016. Talk: "The Derived Category of Sheaves of Commutative DG Rings".
- BGU Algebraic Geometry and Number Theory Seminar, December 2016. Talk: "The Derived Category of Sheaves of Commutative DG Rings".
- Haifa University Algebra Seminar, December 2016. Talk: "The Derived Category of Sheaves of Commutative DG Rings".
- University of Antwerp, Algebra Seminar, February 2016. Talk: "Derived Categories of Bimodules".
- Institut Henri Poincaré, Paris, Algebra Seminar, January 2016. Talk: "Derived Categories of Bimodules".
- Université Paris 13, Number Theory Seminar, January 2016. Talk: "Local Beilinson-Tate Operators".
- Institut Henri Poincaré, Paris, Algebra Seminar, January 2016. Talk: "Derived Categories of Bimodules".
- MIT Infinite Dimensional Algebra Seminar, September 2015. Talk: "Derived Categories of Bimodules".
- University of Washington Mathematics Colloquium, September 2015. Talk: "Nonabelian multiplicative integration on surfaces".
- BGU Algebraic Geometric and Number Theory Seminar, January 2015. Talk: "Local Beilinson-Tate Operators"
- BGU Algebraic Geometric and Number Theory Seminar, January 2015. Talk: "High Dimensional Topological Local Fields and Residues".
- Hebrew University Math. Colloquium, December 2014. Talk: ""Nonabelian multiplicative integration on surfaces".
- Haifa University Math. Colloquium, December 2014. Talk: ""Nonabelian multiplicative integration on surfaces".
- BGU Math. Colloquium, December 2014. Talk: ""Nonabelian multiplicative integration on surfaces".
- MIT Infinite Dimensional Algebra Seminar, October 2014. Talk: "Local Beilinson-Tate Operators"

Present Research Activities

Research in Progress and Future Plans

(1) Rigid dualizing complexes on schemes and Deligne-Mumford stacks. The stress here is on duality for proper morphisms, and the new local to global relationship afforded by the Van den Bergh rigidity. The work on schemes is almost done, and only requires writing. For DM stacks this is only in the initial stages. There is a delay due to the need to fix mistakes in an earlier paper (number 31 above); see preprints below.

(2) Rigid dualizing complexes on DG rings and DG schemes. The aim here is twofold: (1) to establish rigidity for dualizing complexes over DG rings; and (2) to extend existing results on schemes by working with DG schemes (e.g. the relative dualizing complex: remove the flatness assumption).

(3) Rigid dualizing complexes of Hopf algebras. The rough idea is that the rigid dualizing complex of a Hopf algebra should have certain equivariance properties. This might be related to groupoid schemes (see item 1 above). This project is in the initial stages.

(4) Homological mirror symmetry via noncommutative duality. This direction is not well-formulated yet, but it refers to the fact that some papers on HMS use duality for noncommutative projective schemes (by Zhang and myself) in the proofs. I hope to be able to make contributions here based on my experience in duality theory.

(5) Rigid dualizing complexes on noncommutative rings over a base ring (as opposed to a base field). We aim to extend Van den Bergh's existence results to this context. Some of the work will involve DG rings.

More details are in the Research Summary 2007-2011, available online at
`http://www.math.bgu.ac.il/~amyekut/CV/cv.html`