

Hara Charalambous

Professor

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Employment

- 2011-Present **Professor**, *Department of Mathematics, Aristotle University of Thessaloniki (AUTH)*.
- 2004-2011 **Associate Professor**, *Department of Mathematics, AUTH*.
- 1996-2004 **Associate Professor**, *University at Albany, State University of New York (SUNY)*.
- 1997-1998 **Visiting Scholar**, *Columbia University*.
- 1993-1994 **Visiting Scholar**, *Brandeis University*.
- 1990-1996 **Assistant Professor**, *University at Albany, SUNY*.
- 1987-1990 **Research Assistant**, *University of Illinois, Urbana-Champaign*.
- 1983 **Computer Analyst**, *Summer School, CERN, Switzerland*.

Education

- 1990 **Ph.D.**, *University of Illinois at Urbana-Champaign*.
- 1986 **M.Sc.**, *Eastern Illinois University*.
- 1984 **B.Sc. (Πτυχίο)**, *Mathematics, AUTH*.
- 1980 **Matriculated**, *Department of Mathematics, AUTH*, National exams. Ranked first.

Academic Administrative Experience

- 2017-2020 **Head**, *Department of Mathematics, AUTH*.
 - [Head's End of Term Report](#) (in greek).
 - European Master in Official Statistics (EMOS), Eurostat, European Commission, Certification for the Graduate Program in Mathematics, Department of Mathematics, AUTH, 2018.
 - [First Conference of Greece's Heads and Deans of Departments of Mathematics, Πόρισμα Συνόδου 2018](#)
- 2014-2017 **Director**, *Sector of Algebra, Number Theory and Mathematical Logic, Department of Mathematics, AUTH*.
- 2013-2015 **Director**, *Graduate Program, Department of Mathematics, AUTH*.

Committee Memberships, AUTH (selection)

- 2017-2020 **Senate**, *member*.
- 2017-2020 **DeanShip**, *Faculty of Sciences*, member.
- 2016-2021 **Committee for Gender Equality and Equity**, *Faculty of Sciences*, Coordinator, member.
- 2015-2017 **Graduate Affairs Senate Committee**, *member*.
- 2011-2013 **Environmental Senate Committee**, *member*.
- 2011-2012 **Research Committee (ΕΛΚΕ ΑΠΘ)**, *member*.

Committee Memberships, Department of Mathematics, AUTH (selection)

- 2014-2021 **Internal Evaluation Committee**, Chair, member.
 - o Proposal for an Electronic Questionnaire for Graduates (Αποτίμηση Σπουδών), accepted by the Senate for use by all AUTH departments (2016)
- 2009, 2020 **Colloquia Committee**, *Chair, member*.
- 2006-2007 **Webpage Committee**, *Chair*.

Committee Memberships, University at Albany SUNY (selection)

- 2002-2004 **Graduate Affairs Committee**, *University Senate*, Chair.
- 2002-2004 **Executive Committee**, *University Senate*, member.
- 1999-2001 **Promotion and Tenure Committee**, *College of Arts and Sciences*, member.

Other Committee Memberships

- 2015-2016, 2021 **Elected Representative**, *University Faculty Union (ΕΣΔΕΠ)*, AUTH.
- 2020- **CWM Ambassador**, *Committee for Women in Mathematics*, International Mathematical Union.
- 2021- **Deputy Chairwoman**, *Regional Committee for Pioneering and Experimental Schools (ΠΕΠΠΣ) Central Macedonia*, Ministry of Education and Religious Affairs.

Teaching

- o undergraduate curriculum: Calculus I-III, Linear Algebra, Introduction to (Abstract) Algebra, Abstract Algebra (Theory of Groups, Theory of Rings), Number Theory, Introduction to the Theory of Curves, Galois Theory, Algebraic Number Theory, History of Mathematics.
- o graduate curriculum: Advanced Algebra, Homological Algebra, Commutative Algebra.
- o Institutions: AUTH, Albany SUNY.

Use of Technology in Teaching, Teaching in Large Audiences

- o Participation to the programme open-courses, 2008-2014, AUTH
- o Introduced and established the lab course component for the teaching of the Linear Algebra Course, Undergraduate Curriculum, 2008-present, Department of Mathematics, AUTH
- o Introduced "Exercise Modules" ran by undergraduate teaching assistants for large audience courses, 2013-2015, Department of Mathematics, AUTH
- o collaboration with CS department and IT for the filming and posting online the videos for the lectures of two large audience courses (+300), 2015-2016, Department of Mathematics, AUTH

Research Interests

- o Commutative Algebra with an emphasis on free resolutions of finitely generated modules over Noetherian local rings, Homological algebra and Topological connections, Toric Ideals, Canonical Ideals of Curves, Combinatorial Aspects of Commutative Algebra, Differential Algebra, Families of curves in Algebraic Geometry.

Awards - Research, Travel Grants-Funded Projects (selection)

- 2019-2021 **Research Grant EΔBM 103**, ΕΣΠΑ 2014-2020, Academic Advisor: A. Kontogeorgis, Deputy Academic Advisor: H. Charalambous, Research Team: S. Karanikolopoulos, K. Karagiannis.
- 2016-2017 **Scientific Coordinator**, *Academic Performances in Aristotle University of Thessaloniki: the gender and social vulnerability factors*, Research Committee, AUTH.
- 2014 **Scientific Coordinator**, *Applications of Mathematics to the Industry and Enterprises*, Operational Programme Human Resources Development, Education and Lifelong Learning (PEGA), ΕΣΠΑ 2014-2020.
- 2012 **Research Grant**, *Minimal generators and free resolutions*, Research Committee, AUTH.
- 2005-2008 **Research Grant**, *Pythagoras II*, Algebra and Applications of Algebra in Physics, Greek Ministry of Education.
- 2003 **Travel Grant**, *Banff International Research Station Workshop in Commutative Algebra and Algebraic Geometry*, Canada.
- 2002 **College Travel Funds Award**, *University at Albany*.
- 1994, 1996 **Faculty Research Awards Program**, *University at Albany*.
- 1993-1994 **Research Planning Grant**, *National Science Foundation (USA)*.
- 1993 **Dr. Drescher's A.A.L.A. Research Grant**, *University at Albany*.
- 1991 **New Faculty Award**, *UUP, University at Albany*.
- 1990 **Reiner Algebra Award**, *University of Illinois*, Best Algebra Thesis.
- 1986 **Phi Kappa Phi**, *University of Illinois*, excellence in graduate studies.
- 1980 **Award**, *National Center of Fellowships (IKY)*, Greece, grade achieved in the national examinations.

Ph.D. Supervision

- 2020 **Kostas Karagiannis**, *The canonical ideal and syzygies of curves with automorphisms*, Current Status: Postdoc, University of Athens.
- 1999 **Christa Deno**, *Resolving Multigraded Modules over Polynomial Rings*, Current Employment: Associate Professor, The College of Saint Rose, Albany, NY.
- 1998 **Melissa Sutherland**, *Hypersurfaces and Almost Complete Intersections, Resolutions and Poincaré Series of Cyclic Modules*, Current Employment: Associate Professor, State University of New York, Geneseo, NY.

M.Sc. Supervision (AUTH)

- 2018 **Χριστόφορος Σπάρταλης**, *Κάτω όρια για τους αριθμούς Betti μονωνυμικών ιδεωδών.*
- 2017 **Βασίλης Χαραλαμπίδης**, *Βαθμωτές Συζυγίες.*
- 2017 **Κωνσταντία Μανούσου-Σωτηροπούλου**, *Συζυγίες και Μονωνυμικά Ιδεώδη.*
- 2017 **Σπύρος Μυλωνάς**, *Συζυγίες και Τορικά Ιδεώδη.*
- 2017 **Μυρτώ Μοιρασγεντή**, *Υπολογιστική Άλγεβρα και Συνδυαστική Τορικών Ιδεωδών.*
- 2016 **Δημήτριος Αρβανιτάκης**, *Υπολογισμοί στην Αντιμεταθετική Άλγεβρα και Αλγεβρική Γεωμετρία με το Macaulay2: Ένας Οδηγός Χρήσης με Παραδείγματα.*
- 2016 **Alexandros Grosdos**, *Gaussian Conditional Independence Ideals and Primary Decompositions.*
- 2015 **Ιωάννης Κεχαγιάς**, *Αλγόριθμοι για τορικά ιδεώδη γραφημάτων πλήρους διατομής και εύρωστα ιδεώδη γραφημάτων.*
- 2015 **Αντωνία Αντωνίου**, *Σειρές του Hilbert.*
- 2013 **Διονύσης Θασίτης**, *Ιδεώδη Ακμών και Κορυφών Γραφημάτων.*
- 2011 **Μακρίνα Αγάογλου**, *Το βάθος του Stanley.*
- 2009 **Νικολέττα Σατσλή**, *Κατασκευαστικές Μέθοδοι στην Αντιμεταθετική Άλγεβρα.*
- 2009 **Αρετή Καραβασίλη**, *Μονωνυμικά Ιδεώδη Ελεύθερα Τετραγώνων.*
- 2008 **Ισαάκ Χάγουελ**, *Τορικά Ιδεώδη.*

Ph.D. and M.Sc. Thesis Committees

- ο Participated in more than 8 Ph.D., 20 M.Sc. thesis committees (Brandeis, SUNY, AUTH, University of Athens, University of Ioannina, University of Crete).

Monographs (in greek)

- 2021 **An Introduction to Commutative Algebra**, *H. Charalambous*, teaching notes, e-version.
- 2017 **Linear Algebra**, *H. Charalambous, T. Theohari, H. Vavatsoulas*, Tziolas, ISBN 978-960-418-727-0.
- 2015 **Galois Theory**, *H. Charalambous, T. Theohari*, Kallipos, ISBN 978-960-603-208-0.

- 2015 **An Introduction to Linear Algebra for Natural Sciences**, *H. Charalambous, A. Fotiadis*, Kallipos, ISBN 978-960-603-273-8.
- 2006 **An Introduction to Linear Algebra**, *H. Charalambous, T. Theohari, H. Vavatsoulas*, Thessaloniki, ISBN 960-631-094-9.

Publications (in Mathematical Reviews)

Szygies of ideals of polynomial rings over principal ideal domains, *Charalambous Hara, Kostas Karagiannis, Sotiris Karanikolopoulos, Aristides Kontogeorgis*, ISSAC'20: Proceedings of the 45th International Symposium on Symbolic and Algebraic Computation, 78-82 (2020), <https://doi.org/10.1145/3373207.3404046>.

Markov bases of lattice ideals, *Charalambous Hara, Thoma Apostolos, Vladioiu Marius*, *Collectanea Mathematica*, 68 (3), 377-400 (2017).

Binomial fibers and indispensable binomials, *Charalambous Hara, Thoma Apostolos, Vladioiu Marius*, *Journal of Symbolic Computation*, 74, 578-591 (2016).

Markov bases and generalized Lawrence liftings, *Charalambous Hara, Thoma Apostolos, Vladioiu Marius*, *Annals of Combinatorics*, 19 (4), 661-669 (2015).

Betti numbers of multigraded modules of generic type, *Charalambous Hara, Tchernev Alexandre*, *Journal of Pure and Applied Algebra*, 219 (5), 1868-1884 (2015).

Markov complexity of monomial curves, *Charalambous Hara, Thoma Apostolos, Vladioiu Marius*, *Journal of Algebra*, 417, 391-411 (2014).

Topological Constructions for Multigraded Squarefree Modules, *Charalambous Hara*, *Proceedings of the American Mathematical Society (AMS)*, 139 (7), 2383-2397 (2011).

On the generalized Scarf complex of lattice ideals, *Charalambous Hara, Thoma Apostolos*, *Journal of Algebra*, 223 (5), 1197-1211 (2010).

On simple A-multigraded minimal resolutions, *Charalambous Hara, Thoma Apostolos*, *Combinatorial aspects of commutative algebra. Exploratory workshop on combinatorial commutative algebra and computer algebra*, Mangalia, Romania, May 29-31, 2008, Providence, RI, *AMS Contemporary Mathematics*, 502, 33-44 (2009).

Minimal systems of binomial generators and the indispensable complex of a toric ideal, *Charalambous Hara, Katsabekis Anargyros, Thoma Apostolos*, *Proceedings of the American Mathematical Society (AMS)*, 135 (11), 3443-3451 (2007).

On the denominator of the Poincaré series for monomial quotient rings, *Charalambous Hara*, *Communications in Algebra*, 33 (4), 1119-1125 (2005).

Free resolutions for multigraded modules: a generalization of Taylor's construction, *Charalambous Hara, Tchernev Alexandre*, *Mathematical Research Letters*, 10 (4), 535-550 (2003).

Multigraded modules, *Charalambous Hara, Deno Christa*, *New York Journal of Mathematics*, 7, 1-6, (2001).

Extremal Betti numbers and applications to monomial ideals, *Bayer Dave, Charalambous Hara, Popescu Sorin*, *Journal of Algebra*, 221 (2), 497-512 (1999).

Pointed simplicial complexes, *Charalambous Hara*, Illinois Journal of Mathematics, 41 (1), 1-9 (1997).

A resolution of the residue field over arbitrary monomial rings, *Charalambous Hara*, Journal of Algebra, 181 (1), 187-195 (1996).

Resolutions of monomial almost complete intersections and generalizations, *Charalambous Hara, Reeves Alyson*, Communications in Algebra, 23 (11), 4087-4099 (1995).

Resolutions obtained by iterated mapping cones, *Charalambous Hara, Evans E. Graham Jr.*, Journal of Algebra, 176 (3), 750-754 (1995).

Poincaré series and resolutions of the residue field over monomial rings, *Charalambous Hara, Reeves Alyson*, Communications in Algebra, 23 (6), 2389-2399 (1995).

Resolutions with a given Hilbert function, *Charalambous Hara, Evans E. Graham Jr.*, Commutative algebra: syzygies, multiplicities, and birational algebra (South Hadley, MA, 1992), Providence RI, AMS Contemporary Mathematics, 159, 19-26 (1994).

Betti numbers and simplicial complexes, *Charalambous Hara*, Communications in Algebra, 21 (12), 4467-4471 (1993).

Problems on Betti numbers of finite length modules, *Charalambous Hara, Evans E. Graham Jr.*, Free resolutions in commutative algebra and algebraic geometry (Sundance, UT, 1990), 25-33, Research Notes in Mathematics 2, Jones and Bartlett, Boston, MA, 1992.

A deformation theory approach to Betti numbers of finite length modules, *Charalambous Hara, Evans E. Graham Jr.*, Journal of Algebra, 143 (1), 246-251 (1991).

Betti numbers of multigraded modules, *Charalambous Hara*, Journal of Algebra, 137 (2), 491-500 (1991).

Betti numbers for modules of finite length, *Charalambous Hara, Evans E. Graham, Miller Matthew*, Proceedings of the American Mathematical Society (AMS), 109 (1), 63-70 (1990).

On Lower Bounds for the Betti Numbers of Finite Length Modules, *Charalambous Hara*, Ph.D. thesis, University of Illinois at Urbana-Champaign (1990).

Research Impact and Recognition

o Received > 430 citations according to Google Scholar (h-index=10).

Editorial (for the greek version)

2018 **The Math Book**, *Το Βιβλίο των Μαθηματικών*, Clifford A. Pickover, Εκδόσεις Παρισιάνου Α. Ε., ISBN 978-960-583-339-8.

Reports on Gender Issues

- 2017 [Academic Performances in Aristotle University of Thessaloniki](#), H. Charalambous, S. Chatzopoulos, F. Kolyva-Machera, E. Angelis, (in greek).
- 2016 **A meta-analysis on the gender factor and the academic performance of students of the Faculty of Sciences of Aristotle University of Thessaloniki**, Chatzopoulos Stavros, Kolyva-Machera Fotini, Charalambous Hara, Proceedings of the 29th Panhellenic Statistics Conference, ISSN: 1792-2461 (2016).

Editorial Boards

- 2016-present **Bulletin of the Hellenic Mathematical Society.**

International Conference Organization

- 2009 **History of Modern Algebra: 19th century and later**, Co-chair, AUTH, Thessaloniki.
- 2007 **Workshop on Combinatorics and Commutative Algebra II**, Thessaloniki.
- 2006 **Workshop on Combinatorics and Commutative Algebra I**, Ioannina.
- 2001 **Annual Route 81 Conference on Algebraic Geometry and Commutative Algebra**, University at Albany, SUNY.
- 1986 **Annual Route 81 Conference on Algebraic Geometry and Commutative Algebra**, University at Albany, SUNY.

Hellenic Conference Organization

- 2021 **Αναζητώντας τη γνώση: Τα σχολικά εγχειρίδια στο Ελληνικό Κράτος**, Institute of Educational Policy (IEP), National Library of Greece, Ministry of Educational Policy.
- 2018 **90 Years School of Mathematics AUTH Conference**, Aristotle University of Thessaloniki.
- 2014 **Algebra Conference**, CoChair, Aristotle University of Thessaloniki.
- 2012 **Biodiversity Conference, 50 years since Rio**, co-organizer, Aristotle University of Thessaloniki.
- 2006 **6th Panhellenic Conference in Algebra and Number Theory**, CoChair, Thessaloniki.

Review Panels - Scientific Committees

- 2014-2016 **Hellenic Academic Ebooks**, The Project Kallipos, Natural Sciences Committee.
- 2001 **National Science Foundation, review panel**, *Commutative Algebra and Algebraic Geometry*, Washington, DC.

Proceedings - Editor

- 2020 **90 Years of the Department of Mathematics, AUTH, Thessaloniki, Conference Proceedings**, Chief Editor: M. Marias, ISBN: 978-618-82725-2-1.

- 2010 **History of Modern Algebra conference: 19th century and later**, AUTH, Thessaloniki, **Conference Proceedings**, coeditors: Th. Theohari-Apostolidi, D. Papadopoulou, ISBN 960-234-628-8.
- 2006 **Proceedings of the 6th Panhellenic Conference in Algebra and Number Theory**, coeditor: Th. Theohari-Apostolidi, ISBN 960-234-628-8.

Seminar Organization

Algebra, Number Theory and Mathematical Logic Seminar, 2005-2011, 2013-2017, 2020-present, Coorganizer.

Szyzygy Seminar, 2016-2018.

Student Seminar, 2015-present, Faculty coordinator.

Talks and Colloquia (selection)

- 2019 **WOMAT seminar & debate**, *Instituto de Ciencias Matematicas*, Spain.
- 2017 **Studies in Mathematics**, *Samos*.
- 2016 **The 24th National Algebra School**, *EMS Summer School on Multigraded Algebra and Applications*, Moieciu de Sus, Romania.
- 2014 **22nd National School on Algebra, Algebraic and Combinatorial Applications of Toric Ideals**, *Bucharest*, Romania, Main Lecturer, 3 lectures.
- 2013 **Rt 81 Conference**, *Commutative Algebra and Algebraic Geometry*, Syracuse.
- 2013 **Special Session on Combinatorial Commutative Algebra**, *AMS meeting*, Temple University, Philadelphia.
- 2013 **Algebra Seminar**, *Department of Mathematics*, University at Genova.
- 2013 **Seminar of the Department of Mathematics and Statistics**, *University of Cyprus*, Nicosia.
- 2012 **The 20th National School on Algebra**, *Discrete Invariants in Commutative Algebra and in Algebraic Geometry*, Mangalia, Romania, Main Speaker, 2 lectures.
- 2012 **Contemporary Algebra and Geometry in Greece**, *Department of Mathematics*, National and Kapodistrian University of Athens.
- 2011 **Algebra Seminar**, *University of Crete*.
- 2010 **Colloquium**, *University at Albany*, SUNY.
- 2009 **Algebra Seminar**, *University of Ioannina*.
- 2009 **Colloquium**, *Ovidius University*, Costanza, Romania.
- 2008 **Algebra Seminar**, *Samos*.
- 2008 **Algèbre Commutative et ses Interactions avec la Geometrie Algébrique**, *CIRM*, Luminy, France.
- 2008 **Exploratory Workshop on Combinatorial Commutative Algebra and Computer Algebra**, *Mangalia*, Romania.
- 2007 **Conferinta**, *IMAR*, Bucharest.
- 2007 **Algebra Seminar**, *University of Bucharest*.

- 2006 **Colloquium**, *College of William and Mary*, Virginia, USA.
- 2006 **Colloquium**, *University at Albany*, SUNY.
- 2004 **Rt 81 Conference**, *Cornell University*.
- 2004 **AMS meeting**, *Lawrenceville*, NJ.
- 2003 **Workshop in Commutative Algebra and Algebraic Geometry**, *Banff International Research Station*, Canada.
- 2002 **CRANTS seminar**, *Albany*, New York.
- 2002 **Sectional AMS meeting**, *Orlando*, Florida.
- 2002 **Colloquium**, *National Technical University of Athens*.
- 2000 **CRANTS seminar**, *Albany*, New York.
- 2000 **AMS meeting in Toronto**, *Canada*.
- 2000 **Capital Region Algebra and Number Theory Seminar**, *Albany*, New York.
- 2000 **Sectional AMS meeting**, *South Bend*, Indiana.
- 2000 **National AMS meeting in Washington, DC**.
- 1999 **Regional AMS meeting in Urbana-Champaign**, *Illinois*.
- 1998 **Algebra Conference**, *AUTH*, Thessaloniki.
- 1998 **Syzygies Seminar**, *Columbia University*.
- 1997 **Sectional Conference in Commutative Algebra**, *Cornell*.
- 1996 **Sectional AMS meeting in Columbia**, *Missouri*.
- 1996 **Algebra Seminar**, *Aristotle University*, Greece.
- 1996 **Algebra Seminar**, *Stockholm*, Sweden.
- 1996 **Commutative Algebra Seminar**, *Berkeley*, California.
- 1995 **Sectional AMS meeting in Kent**, *Kent*, Ohio.
- 1995 **Syzygies and Geometry Conference**, *Boston*.
- 1994 **Fellowship of the Ring Seminar**, *University of Illinois*, Urbana-Champaign.
- 1994 **Commutative Algebra International Conference**, *Vechta*, Germany.
- 1994 **Commutative Algebra Workshop**, *Trieste*, Italy.
- 1994 **Algebra Seminar**, *University of Athens*, Greece.
- 1993 **Colloquium**, *University of Massachusetts*, North Dartmouth.
- 1993 **Fellowship of the Ring Seminar**, *Brandeis University*.
- 1993 **Sectional AMS meeting in Syracuse**, *New York*.
- 1993 **Valley Geometry Seminar**, *Amherst College*, Massachusetts.
- 1992 **Summer CMS meeting in Toronto**, *Canada*.
- 1991 **Curves Seminar at Queens University**, *Kingston*, Canada.
- 1991 **Summer AMS meeting**, *Orono*, Maine.

█ Talks to general audiences (in greek, selection)

- 2019 **Round Table**, *The enhancement of Mathematics as a necessary condition for the effective education in modern society*, 36th Panhellenic Conference on Greek Education, Greek Mathematical Society, Larissa.
- 2016 **Galois Theory in 30 minutes**, *8th Math Week*, Greek Mathematical Society of Central Macedonia, Thessaloniki, [presentation](#).
- 2012 **Emmy Noether: Modern Algebra and the Laws of Physics**, *4th Math Week*, Greek Mathematical Society, Thessaloniki.
- 2010 **Emmy Noether in the pantheon of mathematicians**, *Society of Greek Physicist of Central and Western Macedonia*.
- 2007 **The passage from Fermat and Galois to Modern Algebra**, *1st Math Week*, Greek Mathematical Society of Central Macedonia, Thessaloniki.

█ Reviewer - Referee

- Reviewer for Zentralblatt MATH, international reviewing service for articles in pure and applied mathematics (2004-2011)
- Reviewer for Research Proposals: National Science Foundation (USA), Natural Sciences and Engineering Research Council of Canada, National Security Agency/American Mathematical Society (USA) (1991-2004)
- Referee for the following journals: Journal of Pure and Applied Algebra, Commentarii Mathematici Helvetici, Journal of Algebra, Journal of Algebraic Combinatorics, Journal of Symbolic Computation, Illinois Journal of Mathematics, Communications in Algebra, Proceedings of the American Mathematical Society, Pacific Journal of Mathematics, Bulletin Mathematique de la Societe des Sciences Mathematiques de Roumanie, Compositio Mathematica, Australasian Journal of Combinatorics, European Journal of Combinatorics, Archiv der Mathematik, Involve

█ Languages

- Greek, English, French