

## CURRICULUM VITAE

### ALEXANDRU CONSTANTINESCU

Born:	September 22nd 1981, Bucharest	Università di Genova
Citizenship:	Romanian	Dipartimento di Matematica
Marital Status:	Married, one daughter (since March 2015)	Via Dodecaneso 35
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### AREAS OF RESEARCH

Commutative algebra and its interactions with combinatorics and algebraic geometry. In particular: monomial and binomial ideals, free resolutions, h-vectors and f-vectors of simplicial complexes, Hilbert schemes of points, liaison theory, deformation theory.

### EDUCATION AND EMPLOYMENT

10/2016-09/2018 INdAM-Marie Curie fellow, University of Genoa (Italy)

09/2013-09/2016 Postdoctoral fellow, Prof. [Klaus Altmann](#)'s group, Freie Universität Berlin (Germany)

09/2012-08/2013 Postdoctoral fellow, Prof. [Elisa Gorla](#)'s group, University of Neuchâtel (Switzerland)

09/2010-08/2012 Postdoctoral fellow, SNF-Prof. Elisa Gorla's group, University of Basel (Switzerland)

04/2009 Ph.D in Mathematics, University of Genoa, (Italy)  
*Diss.: Combinatorial Structures, Lefschetz Property and Parametrizations of Algebras*  
Advisor: Prof. [Aldo Conca](#)

01/2008–12/2009 Research fellow, University of Genoa (Italy)

01/2005–12/2007 Graduate assistant, University of Genoa (Italy)

since 09/2004 Research assistant, Institute of Mathematics of the Romanian Academy, (Romania) (currently on leave)

06/2004 Bachelor's Degree in Mathematics, University of Bucharest, (Romania)  
*Diss.: Birational Classification of Smooth Projective Surfaces*  
Advisor: Prof. [Paltin Ionescu](#)

### FELLOWSHIPS

10/2016-09/2018 Marie Curie fellowship of the Istituto Nazionale di Alta Matematica  
Title: *Deformals*, Host Institute: University of Genoa

09/2011-08/2013 Two-year postdoctoral grant as part of Prof. Elisa Gorla's Swiss National Science Foundation project (grant no. [NMA1522](#))

01/2008–01/2010 Two-year individual research grant of the University of Genoa  
Title: *Algebras with weak and strong Lefschetz Property and their Betti numbers*

01/2005–12/2007 Three-year Ph.D. scholarship of the University of Genoa

10/2000–06/2004 Undergraduate merit fellowship of the University of Bucharest

### GRANTS AND OTHER RESEARCH RELATED FUNDING

03/2016–02/2018 Member of a DAAD-MIUR Joint Mobility Program (Amount 20'000€)  
Title: *Combinatorial and computational methods in commutative algebra*

10/2015 *Research in Pairs* grant of the Mathematisches Forschungsinstitut Oberwolfach  
Title: *Betti tables, Coxeter groups and curvature*

07/2012 *Research in Pairs* grant of the Centro Internazionale per la Ricerca Matematica Trento  
Title: *Hilbert Functions of Matroids and Pure O-sequences*

### ORGANISATION OF SCIENTIFIC AND OUTREACH EVENTS

2017 Outreach: *IMAGINARY* exhibition at the *Enescu 2017 Music Festival*  
Co-organizers: Klaus Altmann, Marian Aprodu, Hélène Esnault, and Andreas Matt  
Venue: Bucharest (concert hall of the Romanian Radio Broadcasting Company)

Confirmed financing sources: Enescu festival (40'000€)  
Submitted financing requests: German Embassy Bucharest, Goethe Institut Bucharest, local commercial sponsors.

- 2017 Conference + Workshop: *Instruments of Algebraic Geometry*  
Co-organizers: Klaus Altmann, Marian Aprodu, and H el ene Esnault  
Venue: University of Bucharest (Romania)  
Confirmed financing sources: CMI (23000 €), ERC advanced grant 226257 (20000€)
- 2016 Mini-symposium (7th ECM): *Combinatorial Algebraic Geometry*  
Co-organizer: Lars Kastner  
4 speakers, Part of the 7th ECM, Berlin (Germany)
- 2014 Conference: *Meeting on Combinatorial Commutative Algebra (MOCCA2014)*  
Co-organizers Thomas Kahle, Matteo Varbaro  
23 speakers + 29 attending participants, Levico Terme (Italy)  
Financing sources: NSF (12'000\$), CIRM Trento (6'500€), and INDAM (4'000€)

### INSTITUTIONAL RESPONSIBILITIES

- 2016 Member of the Examination Board "Mathematik Bachelor Lehramt" (FU Berlin)
- 2016 Member of the faculty council (FU Berlin)
- 2015 Deputy member of the faculty council (FU Berlin)
- 2014–2016 Member of Bachelor's, Master's, Ph.D. and hiring committees (FU Berlin)
- 2010–2012 Co-examiner at over 50 oral exams (University of Basel)

### COMMISSIONS OF TRUST

- 2009– Selected referee activity: Manuscripta Math., Michigan Math. J., J. Comb. Theory A, J. Algebraic. Comb., J. Pure Appl. Algebra, Arch. Math., J. Algebra Appl, J. Appl. Alg. Engrg. Comm. Comput.
- 2010– Reviewer for Zentralblatt MATH and Mathematical Reviews

### TEACHING

- Fall 2016 Cotangent Cohomology and Deformations, PhD Course, University of Genoa, *English*
- Spring 2016 Monomial Ideals (Algebra 3), Freie Universit at Berlin, *German*
- Spring 2016 Computer Algebra, Freie Universit at Berlin, *German*
- Spring 2015 Computer Algebra, Freie Universit at Berlin, *German*
- Spring 2012 T.A. to Commutative Algebra 2 ( Prof. E. Gorla) University of Basel, *German*
- Fall 2011 T.A. to Linear Algebra 1 ( Prof. H. Kraft), University of Basel, *German*
- Spring 2011 T.A. to Linear Algebra 2 ( Prof. D. Masser), University of Basel, *German*
- Fall 2010 T.A. to Projective Geometry Seminar ( Prof. J. Blanc), University of Basel, *German*
- 2008 & 2009 Graph theory for High School Seniors, a one-day course, University of Genoa, *Italian*
- Spring 2006 Tutor for first year students, University of Genoa, *Italian*

### SELECTED TALKS

- 08/2017 SIAM Conference on Applied Algebraic Geometry - Mini-symposium "Free resolutions governed by geometric and combinatorial data", GIT Atlanta (USA)
- 06/2017 Conference in Honor of Dorin Popescu, Bucharest (Romania)
- 06/2017 Encounter in Topology 'n Algebra, Catania (Italy)
- 04/2017 British Mathematics Colloquium - Algebra Workshop, Durham (UK)

- 10/2015 *Deforming monomial ideals* - Combinatorial and Experimental Methods in Commutative Algebra and Related Fields, Osnabrück (Germany)
- 07/2015 *Groebner cells of Hilbert schemes* - Current trends on Gröbner Bases, Osaka (Japan).
- 06/2015 *Regularity and linear syzygies* - Algebra and Number Theory section of The Eighth Congress of Romanian Mathematicians, Iași (Romania)
- 06/2015 *Hilbert schemes, Groebner cells, and extension algebras* - Homological and Combinatorial Commutative Algebra section of the AMS-EMS-SPM International Meeting, Porto (Portugal)
- 05/2014 *Gröbner cells in the Hilbert scheme of points* - Algebraic Geometry Seminar, Freie Universität Berlin (Germany)
- 12/2013 *Kalai's conjecture and beyond* - Commutative Algebra and Its Interaction to Algebraic Geometry and Combinatorics, Hanoi (Vietnam)
- 11/2013 *h-vectors and f-vectors of flag simplicial complexes* - Oberseminar für Algebra und Geometrie, University of Magdeburg (Germany)
- 06/2013 *Special and Generic Constructions of Pure O-sequences* - Joint AMS-RMS Meeting, Alba Iulia (Romania)
- 05/2013 *Generic Deformations of Matroid Ideals* (short talk) - *Syzygies in Berlin*, Freie Universität Berlin (Germany)
- 09/2012 *Kalai's conjecture and beyond* - RTG Workshop, U.C. Berkeley (USA)
- 07/2012 *On h-vectors of matroids* - Seminario Congiunto, University of Trento – CIRM (Italy)
- 06/2012 *On h-vectors of matroids* - Comm. Alg. and Related Topics Conference, Genoa (Italy)
- 10/2011 *Glicci Toric Ideals of Graphs* - University of Basel (Switzerland)
- 05/2011 *Parametrizations of Ideals in  $k[x, y]$  and  $k[x, y, z]$*  - poster, Midwest Commutative Algebra and Geometry Conference, Purdue University (USA)
- 10/2009 *Parametrizations of Ideals in  $k[x, y]$  and  $k[x, y, z]$* , Combinatorial Structures in Algebra and Topology Conference, Osnabrück (Germany)
- 06/2008 *Algebras with Lefschetz Property m-times* - Genoa-Barcelona Workshop, Genoa (Italy)
- 10/2007 *Betti Numbers of Algebras with Lefschetz Property* - University of Essen (Germany)

## WORKSHOPS AND SCHOOLS

- 12/2012 *Combinatorial Commutative Algebra and Applications*, MSRI, Berkeley (USA)
- 06/2010 *Workshop on Local Rings and Local Study of Algebraic Varieties*, ICTP, Trieste (Italy)
- 07/2008 *Pragmatic 2008, Free Resolutions and Hilbert Series: Algebraic, Combinatorial and Geometric Aspects*, University of Catania (Italy), Teachers: J. Herzog, V. Welker
- 06/2007 *Mini course in Algebraic Statistics*, Technical University Eindhoven (Holland)  
Teacher: S. Sullivant
- 07/2006 *Syzygies, Hilbert Functions and Generic Initial Ideals*, Cortona (Italy)  
Teachers: A. Conca, J. Migliore
- 02/2006 *Winter School in Commutative Algebra*, University of Barcelona (Spain)  
Teachers: H. Brenner, J. Herzog, O. Villamayor
- 05/2004 *School on Commutative Algebra and Interactions with Algebraic Geometry and Combinatorics*, ICTP Trieste (Italy)
- 07/2003 *Scuola Matematica Interuniversitaria*, Perugia (Italy)  
Teachers: L. Bădescu (Algebraic Geometry), F. Mercuri (Algebraic Topology)

## LANGUAGES

*native*: Romanian

*fluent*: English, German, Italian

*good*: French

## PUBLICATIONS

Alexandru Constantinescu

- [1.] *Linear syzygies, flag complexes, and regularity* (with T.Kahle, M.Varbaro)  
**Collectanea Mathematica**, pp. 1-6, <http://dx.doi.org/10.1007/s13348-015-0141-3> (2015)
- [2.] *Determinantal schemes and pure O-sequences* (with M.Mateev)  
**Journal of Pure and Applied Algebra** 219, pp. 3873-3888, (2015)
- [3.] *Cohen-Macaulayness and Limit Behaviour of Depth for Powers of Cover Ideals*  
(with M.R.Pournaki, M.R.Seyed Fakhari, N.Terai, S.Yassemi )  
**Communications in Algebra** 43, No. 1, pp. 143-157 (2015)
- [4.] *h-vectors of matroid complexes* (with M.Varbaro)  
**Proceedings of CoMeTA 2013**, Springer INdAM series, (2015)
- [5.] *Note on a conjecture by Kalai* (with G.Caviglia, M.Varbaro)  
**Israel Journal of Mathematics** 0021-2172, pp. 1–7, (2014)
- [6.] *Generic and special constructions of pure O-sequences* (with T.Kahle, M.Varbaro)  
**Bulletin of the London Mathematical Society**, vol 46, (5). pp. 924–942, (2014)
- [7.] *On the h-vectors of Cohen-Macaulay Flag Complexes* (with M.Varbaro)  
**Mathematica Scandinavica**, vol. 112, issue 1, pp. 87–111, (2013)
- [8.] *Veronese Algebras and Modules of Rings with Straightening Laws*  
**Journal of Commutative Algebra**, vol. IV, Issue 2, pp.229–254, (2012)
- [9.] *Parametrizations of Ideals of  $k[x, y]$  and  $k[x, y, z]$*   
**Journal of Algebra** 346, pp. 1–30, (2011)
- [10.] *Koszulness, Krull Dimension and Other Properties of Graph Algebras* (with M.Varbaro)  
**Journal of Algebraic Combinatorics** 34, pp. 375–400, (2011)
- [11.] *The Standard Graded Property of Vertex Cover Algebras of Quasi-Trees* (with N.Le Dinh)  
**Le Matematiche**, Volume LXIII, Issue II, pp. 173–183, (2009)
- [12.] *Dimension, Depth and Zero-Divisors of the Algebra of Basic  $k$ -Covers of a Graph*  
(with B.Benedetti, M.Varbaro)  
**Le Matematiche**, Volume LXIII, Issue II, pp. 117–156, (2009)
- [13.] *Hilbert Function and Betti Numbers of Algebras with Lefschetz Property of Order  $m$*   
**Communications in Algebra**, 36, 12, pp. 4704–4720, (2008)

## SUBMITTED PAPERS

- [14.] *Gorenstein Liaison for Toric Ideals of Graphs* (with E.Gorla)  
submitted to **Journal of Algebra**

## IN PREPARATION

- [15.] *Betti tables, Coxeter groups and curvature* (with T.Kahle, M.Varbaro)
- [16.] *Extension algebras and the Hilbert scheme of points in the plane* (with D.Deliu)
- [17.] *Cotangent Cohomology of Monomial Schemes*

Genova, February 6, 2017