

ALLEGATO B

UNIVERSITÀ DEGLI STUDI DI MILANO

selezione pubblica per n. 1 posto/i di Ricercatore a tempo determinato ai sensi dell'art.24, comma 3, lettera b) della Legge 240/2010 per il settore concorsuale 01/A2 - Geometria e Algebra, settore scientifico-disciplinare MAT/02

presso il Dipartimento di Matematica "Federigo Enriques",

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[Nome e cognome] CURRICULUM VITAE

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	VENTURA
NOME	EMANUELE
DATA DI NASCITA	[21, 01, 1989]

**INSERIRE IL PROPRIO CURRICULUM
(non eccedente le 30 pagine)**

Data

16/03/2021

Luogo

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RESEARCH INTERESTS: Algebraic Geometry, Commutative Algebra, Algebraic Combinatorics.

EMPLOYMENT:

- | | |
|------------------------|---|
| Jan 2020 - | Postdoc, Mathematical Institute, University of Bern , Bern, Switzerland.
Mentor: Jan Draisma. |
| Sept. 2017 - Dec. 2019 | Postdoc, Texas A&M University , College Station, U.S.A.
Mentors: JM Landsberg and Frank Sottile |
| Sept. 2018 - Dec. 2018 | Postdoc, IMPAN , Warsaw, Poland.
Research fellow during the Simons Semester
<i>Varieties: Arithmetic and Transformations</i> |
| Feb. 2017 - Aug. 2017 | Postdoc, MPI for Mathematics in the Sciences , Leipzig, Germany.
Mentors: Bernd Sturmfels and Mateusz Michałek |

EDUCATION:

- | | |
|-----------------------|---|
| Aug. 2013 - Jan. 2017 | PhD in mathematics, Aalto University , Espoo, Finland
Thesis: Geometry of real tensors and phylogenetics
Advisor: Alexander Engström
Opponent: Kristian Ranestad |
| Spring 2016 | Research visit at FU Berlin |
| Fall 2015 | Research visit at UC Berkeley |
| Nov. 2010 - Mar. 2013 | Master degree in mathematics, University of Catania and Scuola Superiore di Catania (SSC) , Italy
Thesis: Symmetric tensors and their Waring decompositions
Advisor: Riccardo Re
Thesis at SSC: Algebraic groups, Lie algebras and representations
Advisors: Riccardo Re and Francesco Russo
Opponent: Giorgio Ottaviani |
| Fall 2012 | Semester abroad at UC Berkeley
Host: Bernd Sturmfels |
| Oct. 2007 - Nov. 2010 | Bachelor degree in mathematics, University of Catania , Italy
Thesis: Hilbert functions for points with Uniform Position Property (in Italian)
Advisor: Alfio Ragusa |

HONORS AND AWARDS:

- | | |
|------|--|
| 2018 | Aalto Dissertation Award. |
| 2014 | Anile Prize for the Master thesis Symmetric tensors and their Waring decompositions. |

RESEARCH PUBLICATIONS:

20. The strength for line bundles (with E. Ballico), *Math. Scand.*, to appear, 2020.
arXiv: <http://arxiv.org/abs/2004.01586>
19. Vanishing Hessian, wild forms and their border VSP (with H. Huang and M. Michałek), *Math. Ann.*, **378**:1505–1532, 2020.
Published online: <https://doi.org/10.1007/s00208-020-02080-8>
arXiv: <https://arxiv.org/abs/1912.13174>

18. Injective linear series of algebraic curves on quadrics (with E. Ballico), *Ann. Univ. Ferrara Sez. VII Sci. Mat.*, **66**(2):231–254, 2020.
Published online: <https://doi.org/10.1007/s11565-020-00343-5>
arXiv: <https://arxiv.org/abs/1812.02377>
17. Strict inclusions of high rank loci (with E. Ballico and A. Bernardi), *J. Symb. Comput.* (special vol. MEGA 2019), to appear, 2020.
Published online: <https://doi.org/10.1016/j.jsc.2020.07.004>
arXiv: <https://arxiv.org/abs/1907.06203>
16. Entry loci and ranks (with E. Ballico), *Manuscripta Math.*, to appear, 2020.
Published online: <https://doi.org/10.1007/s00229-020-01216-z>
arXiv: <https://arxiv.org/abs/1912.00548>
15. Geometric conditions for strict submultiplicativity of rank and border rank (with E. Ballico, A. Bernardi, F. Gesmundo, and A. Oneto), *Ann. Mat. Pura Appl.*, to appear, 2020.
Published online: <https://doi.org/10.1007/s10231-020-00991-6>
arXiv: <http://arxiv.org/abs/1909.03811>
14. Towards a geometric approach to Strassen’s asymptotic rank conjecture (with A. Conner, F. Gesmundo, J.M. Landsberg and Y. Wang), *Collect. Math.*, **72** (2021), no. 1, 63–86.
Published online: <https://doi.org/10.1007/s13348-020-00280-8>
arXiv: <https://arxiv.org/abs/1811.05511>
13. Singular curves of low degree and multifiltrations from osculating spaces (with J. Buczyński and N. Ilten), *Int. Math. Res. Not. IMRN*, Vol. 2020, No. 21, 8139–8182.
Published online: <https://doi.org/10.1093/imrn/rnaa009>
arXiv: <https://arxiv.org/abs/1905.11860>
12. Labels of real projective varieties (with E. Ballico), *Boll. Unione Mat. Ital.*, **13**(2), 257–273, 2020.
Published online: <https://doi.org/10.1007/s40574-020-00215-y>
arXiv: <https://arxiv.org/abs/1909.11170#>
11. The monic rank (with A. Bik, J. Draisma and A. Oneto), *Math. Comp.*, Vol. 89, **325**: 2481–2505, 2020.
Published online: <https://doi.org/10.1090/mcom/3512>
arXiv: <http://arxiv.org/abs/1901.11354>
10. Minimal degree equations for curves and surfaces (variations on a theme of Halphen) (with E. Ballico), *Beiträge Algebra Geom.*, **61**(2), 297–315, 2020.
Published online: <https://doi.org/10.1007/s13366-019-00471-w>
arXiv: <https://arxiv.org/abs/1906.08117>
9. Partially symmetric variants of Comon’s problem via simultaneous rank (with F. Gesmundo and A. Oneto), *SIAM J. Matrix Anal. Appl. (SIMAX)*, **40**(4), 1453–1477, 2019.
arXiv: <https://arxiv.org/abs/1810.07679>
8. A note on the simultaneous Waring rank of monomials (with E. Carlini). *Illinois J. Math.*, **61**(3-4):517–530, 2017.
arXiv: <https://arxiv.org/abs/1711.00089>
7. Real rank boundaries and loci of forms. *Linear Multilinear Algebra*, **67**(7):1404–1419, 2019.
arXiv: <https://arxiv.org/abs/1708.03078>
6. Phylogenetic complexity of the Kimura 3-parameter model (with M. Michałek). *Adv. Math.*, **343**, 640–680, 2019.

arXiv: <https://arxiv.org/abs/1704.02584>

5. Finite phylogenetic complexity and combinatorics of tables (with M. Michałek). *Algebra Number Theory*, **11**(1):235–252, 2017.
arXiv: <https://arxiv.org/abs/1606.07263>
4. On the real rank of monomials (with E. Carlini, M. Kummer, and A. Oneto). *Math. Z.*, **286**(2):571–577, 2017.
arXiv: <https://arxiv.org/abs/1602.01151>
3. Real rank geometry of ternary forms (with M. Michałek, H. Moon, and B. Sturmfels). *Ann. Mat. Pura Appl.*, **196**(3):1025–1054, 2017.
arXiv: <https://arxiv.org/abs/1601.06574>
2. Real and complex Waring rank of reducible cubic forms (with E. Carlini and C. Guo). *J. Pure Appl. Algebra*, **220**(11):3692–3701, 2016.
arXiv: <https://arxiv.org/abs/1512.04905>
1. The poset of proper divisibility (with D. Bolognini, A. Macchia, and V. Welker). *SIAM J. Discrete Math.*, **31**(3):2093–2109, 2017.
arXiv: <https://arxiv.org/abs/1511.04558>

REFEREED CONFERENCE PROCEEDINGS:

1. Kronecker powers of tensors useful for Strassen’s laser method (with A. Conner, F. Gesmundo, and J.M. Landsberg). *LIPICs, Vol. 151, ITCS 2020*, 10:1–10:28.
Published online: <https://drops.dagstuhl.de/opus/volltexte/2020/11695/pdf/LIPICs-ITCS-2020-10.pdf>

THESIS:

1. Geometry of real tensors and phylogenetics. PhD Thesis, Aalto University, 2017.
<https://aaltodoc.aalto.fi/bitstream/handle/123456789/23521/isbn9789526071756.pdf?sequence=1&isAllowed=y>

PREPRINTS:

5. Strength and slice rank of forms are generically equal (with E. Ballico, A. Bik, A. Oneto), preprint, 2021.
arXiv: <https://arxiv.org/abs/2102.11549>
4. The set of forms with bounded strength is not closed (with E. Ballico, A. Bik, A. Oneto), preprint, 2020.
arXiv: <https://arxiv.org/abs/2012.01237>
3. Asymptotics of degrees and ED degrees of Segre products (with G. Ottaviani and L. Sodomaco), preprint, 2020.
arXiv: <https://arxiv.org/abs/2008.11670>
2. Tensors with maximal symmetries (with A. Conner, F. Gesmundo, and J.M. Landsberg), preprint, 2019.
arXiv: <https://arxiv.org/abs/1909.09518>
1. Rank and border rank of Kronecker powers of tensors and Strassen’s laser method (with A. Conner, F. Gesmundo, and J.M. Landsberg), preprint, 2019.
arXiv: <https://arxiv.org/abs/1909.04785>

INVITED TALKS:

- Mar. 2021 “Vanishing Hessians, wild forms and border VSP” at Geometry seminar, Politecnico di Torino (Online), Italy.
- July 2021 “Asymptotics of degrees and ED degrees of Segre products” at the Special session *Algebraic geometry of data*, SIAM conference on Applied Algebraic geometry, College Station, U.S.A.
- Dec. 2020 “Asymptotics of degrees and ED degrees of Segre products” at Applied Algebraic Geometry Seminar (Online), Italy.
- Nov. 2020 “Singular curves and osculating spaces” at Algebra seminar, Politecnico di Milano (Online), Italy.
- April 2020 “Singular curves and osculating spaces” at InterCity Seminar (Online), Switzerland.
- Oct. 2019 “Singular curves and osculating spaces” at Texas Algebraic Geometry Seminar (TAGS) 2019, College Station, U.S.A.
- July 2019 “Symmetry groups of tensors” at the minisymposium *The algebra and geometry of tensors: structured tensors*, SIAM conference on Applied Algebraic geometry, Bern, Switzerland.
- April 2019 “Symmetry groups of tensors”, Colloquium talk at Auburn University, Auburn, U.S.A.
- Mar. 2019 “Symmetry groups of tensors” at NTAG seminar, Simon Fraser University, Vancouver, Canada.
- Nov. 2018 “Tight tensors” at VAT seminar, IMPAN, Warsaw, Poland.
- April 2018 “Tight tensors” at AMS Session on Algebraic Geometry, Representation Theory, and Applications, Vanderbilt University, Nashville, U.S.A.
- Feb. 2018 “Waring ranks of monomials” at Algebra and Combinatorics seminar, UT Dallas, U.S.A.
- Sep. 2017 “Finite phylogenetic complexity and combinatorics of tables” at AMS Session on Applicable Algebraic geometry, Denton, U.S.A.
- Aug. 2017 “Finite phylogenetic complexity and combinatorics of tables” at SIAM conference on Applied Algebraic geometry, Atlanta, U.S.A.
- June 2017 “Finite phylogenetic complexity and combinatorics of tables” at MEGA 2017, Nice, France.
- July 2017 “Real rank geometry of ternary forms” at Algebra Seminar, Osnabrück University, Germany.
- May 2017 “Finite phylogenetic complexity and combinatorics of tables” at MPI for Mathematics in the Sciences, Leipzig, Germany.
- April 2017 “Real rank geometry of ternary forms” at Algebra Seminar, TU Dortmund, Germany.
- April 2016 “Real rank geometry of ternary forms and oriented matroids” at Discrete Geometry Seminar, FU Berlin, Germany.
- Jan. 2016 “The poset of strict divisibility” at Mathdays of the Finnish Mathematical Society, Turku, Finland.
- Dec. 2015 “Real rank geometry of ternary forms” at Eisenbud Seminar, UC Berkeley, USA.

TEACHING EXPERIENCE:

- 2020-2021 Galois Theory, University of Bern.
- 2020-2021 TA for Seminar in Algebra: Positive polynomials, held by Jan Draisma, University of Bern.
- 2020-2021 TA for Mathematik I für Naturwissenschaften, held by Roger Züst, University of Bern.
- 2019-2020 TA for Mathematik II für Naturwissenschaften, held by Kevin Wildrick, University of Bern.
- 2019-2020 TA for Varieties and Algebraic Groups, held by Jan Draisma, University of Bern.
- 2019-2020 Linear Algebra, Texas A&M University.
- 2018-2019 Graduate writing course, with Dean Baskin, Texas A&M University.
- 2018-2019 Linear Algebra, Texas A&M University.
- 2017-2018 Linear Algebra, Texas A&M University.
- 2017-2018 Calculus III for Engineers, Texas A&M University.
- 2016-2017 TA for Mathematics 1, held by Georg Metsalo, Aalto University.
- 2016-2017 TA for Combinatorics, held by Alexander Engström, Aalto University.
- 2015-2016 TA for Mathematics 2, held by David Radnell, Aalto University.
- 2015-2016 TA for Computational algebraic geometry, held by Kaie Kubjas, Aalto University.
- 2014-2015 TA for Algebraic geometry III, held by Alexander Engström, Aalto University.
- 2013-2014 TA for Algebraic geometry II, held by Alexander Engström, Aalto University.
- 2011-2012 TA for Geometry I, held by Antonio Causa, University of Catania.

ORGANIZING EXPERIENCE:

- 2021 Minisymposium *Algebra and Geometry of Tensors 2: structured tensors*, at SIAM conference on Applied Algebraic geometry, College Station, U.S.A.
- 2019 TiME 2019: Curves and Surfaces, a History of Shapes. EMS School at Levico Terme, Italy. Webpage: <https://sites.google.com/view/time-2019/home>
- 2018 VAT Seminar, IMPAN, Warsaw, Poland. Webpage: <https://www.impan.pl/~vat/seminar.html>
- 2018 AMS Special Session on Topics in Toric Geometry, Northeastern University, Boston, U.S.A. Webpage: http://www.ams.org/meetings/sectional/2252_program_ss17.html
- 2017 Nonlinear Algebra Seminar at MPI for Mathematics in the Sciences, Leipzig, Germany. Webpage: <https://www.mis.mpg.de/nlalg/seminars/2017.html>
- 2016 Summer School on Algebra, Statistics and Combinatorics, at Aalto. Webpage: <https://www.aalto.fi/en/news/summer-school-on-algebra-statistics-and-combinatorics>
- 2015 Meeting for Young Mathematicians in Finland, at Aalto. Webpage: <http://matemaattinenyhdistys.fi/mymf2015/>

PROFESSIONAL SERVICE:

- 2014- Reviewer for Mathscinet and zbMATH
- 2017- Peer-reviewer for Foundations of Computational Mathematics, Linear Algebra and Applications, Journal of Algebra, Bulletin of Mathematical Biology, etc.