

Ada Boralevi

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1 Education

- PhD in Mathematics, Università degli Studi di Firenze, July 2008. Thesis in Algebraic Geometry, title: *Quiver representations and homogeneous vector bundles on flag manifolds*. Advisor: Prof. Giorgio Ottaviani.
- MA in Mathematics, University of California, Los Angeles (UCLA), June 2006.
- Degree in Mathematics (Laurea), 110/110 summa cum laude, Università degli Studi di Firenze, September 2004. Thesis in Algebraic Geometry, title: *The Horrocks-Mumford bundle and its restrictions to planes*. Supervisor: Prof. Giorgio Ottaviani.

2 Employment

Current

- From January 2020: Associate Professor in Geometry, Department of Mathematical Sciences, Politecnico di Torino. (Italian National Scientific Qualification for Full Professor (I Fascia, SC 01/A2), from 05/25/2021.)

Past appointments

- January 2017–January 2020: Assistant Professor (Ricercatore a Tempo Determinato di tipo B), Department of Mathematical Sciences, Politecnico di Torino.
- January 2012–January 2013, July 2013–January 2015, & February 2016–January 2017: Postdoctoral fellow, Geometry and Mathematical Physics Sector, International School for Advanced Studies, Trieste.
- January 2015–January 2016: Postdoctoral fellow, Department of Mathematics and Computer Science, Technische Universiteit Eindhoven.
- March 2013–June 2013: Postdoctoral fellow, Department of Algebra and Algebraic Geometry, Institute of Mathematics of the Polish Academy of Sciences, Warsaw.
- June 2011–December 2011: Postdoctoral fellow, Dipartimento di Matematica e Informatica, Università degli Studi di Trieste.
- September 2008–May 2011: Visiting Assistant Professor, Mathematics Department, Texas A&M University, College Station.

3 Publications

Refereed Journal Articles

1. *Quadric surfaces in the Pfaffian hypersurface in \mathbb{P}^{14}* , with M.L. Fania and E. Mezzetti, *Linear and Multilinear Algebra* 70 (2022), no. 19.
2. *Pencils of singular quadrics of constant rank and their orbits*, with E. Mezzetti, *Rendiconti dell'Istituto di Matematica dell'Università di Trieste* 54 (2022), Art. No. 16, Section 3.
3. *A construction of equivariant bundles on the space of symmetric forms*, with D. Faenzi and P. Lella, *Revista Matemática Iberoamericana* 38 (2022), no. 3, 761–782.
4. *Truncated modules and linear presentations of vector bundles*, with D. Faenzi and P. Lella, *International Mathematics Research Notices* (2018), no. 17, 5347–5377.
5. *Orthogonal and unitary tensor decomposition from an algebraic perspective*, with J. Draisma, E. Horobeț, and E. Robeva, *Israel Journal of Mathematics* 222 no.1 (2017), 223–260.
6. *Uniform determinantal representations*, with J. Doornmalen, J. Draisma, M. Hochstenbach and B. Plestenjak, *SIAM Journal on Applied Algebra and Geometry* 1 (2017), 415–441.
7. *Planes of matrices of constant rank and globally generated vector bundles*, with E. Mezzetti, *Annales de l'Institut Fourier* 65, no. 5 (2015), 2069–2089.
8. *Orthogonal bundles and skew-Hamiltonian matrices*, with R. Abuaf, *Canadian Journal of Mathematics* 67 (2015), no. 5, 961–989.
9. *Linear spaces of matrices of constant rank and instanton bundles*, with D. Faenzi and E. Mezzetti, *Advances in Mathematics* 248 (2013), 895–920.
10. *A note on secants of Grassmannians*, *Rendiconti dell'Istituto di Matematica dell'Università di Trieste* 45 (2013), 67–72.
11. *Secants of Lagrangian Grassmannians*, with J. Buczyński, *Annali di Matematica Pura ed Applicata* 190, 4 (2011), 725–739.
12. *Sections of homogeneous vector bundles*, *Journal of Algebra* 323 (2010) 2301–2317.
13. *Effective results on Picard bundles via M -regularity*, with F. Prantil, *Le Matematiche* 43,1 (2008) 181–203.
14. *The Horrocks-Mumford bundle restricted to planes*, *Collectanea Mathematica* 58,1 (2007) 101–117.

Refereed Proceedings

15. *On simplicity and stability of the tangent bundle of rational homogeneous varieties*, *Proceedings of the 2008 Grenoble Summer School "Geometric Methods in Representation Theory"*, Séminaires et Congrès, Société Mathématique de France, 24-II (2012), 273–295.

Book Chapters

16. *Weyman's method for subspace varieties of skew-symmetric tensors*, with L. Oeding, in J.M. Landsberg, *Tensors: Geometry and Applications*, AMS GSM, vol. 128, (2012), 405–407.

Preprints

- 17.
18. *On the codimension of permanental varieties*, with E. Carlini, M. Michalek and E. Ventura, arXiv:2402.17839, submitted.

4 Invited Talks & Other Presentations

Invited Talks

1. Conference “Pfaffians, Tensors, and Applications”, Max Planck Institut Leipzig, DE, 11/22
Spaces of matrices with rank conditions
2. Conference “Geometry in Complexity and Computations”, Konstanz, DE, 09/22
Uniform determinantal representations and spaces of singular matrices
3. Mini symposium “Real algebraic geometry in action with a view towards optimization”, EWM General Meeting 2022, Helsinki, FI, 08/22
Uniform determinantal representations and spaces of singular matrices
4. Bandoleros 2022 - Sixth AG meeting on vector bundles and their applications, Ankara, TR, 05/22
Matrices of constant rank, quadric surfaces, Pfaffian hypersurfaces
5. Università di Firenze, 03/22 - *Uniform determinantal representations and spaces of singular matrices*
6. Jagellonian University (online), Krakow, 11/21
A construction of equivariant vector bundles on the space of symmetric forms
7. Università di Trieste (online), 11/20 – *Matrices of constant rank, quadric surfaces, Pfaffian hypersurfaces*
8. Università dell’Aquila, 11/19 – *Una costruzione di fibrati equivarianti sullo spazio delle forme simmetriche*
9. Universitetet i Bergen, 12/18 – *A construction of equivariant vector bundles on the space of symmetric forms*
10. Loughborough University, 11/18 – *A construction of equivariant vector bundles on the space of symmetric forms*
11. Follow-up Workshop to JTP “Algebraic Geometry”, Hausdorff Institute, Bonn, 04/18
A construction of equivariant vector bundles on the space of symmetric forms
12. Nederlands Mathematisch Congres, Diamant session, 04/18
Spaces of matrices of constant rank, vector bundles, and truncated graded modules
13. Université de Pau et des Pays de l’Adour, 02/18 – *Décomposition orthogonal et unitaire des tenseurs*
14. “Algebraic Geometry Genova-Nice-Torino” meeting, Turin, 02/18
A construction of equivariant vector bundles on the space of symmetric forms
15. Università di Trieste, 01/18 – *A construction of equivariant vector bundles on the space of symmetric forms*
16. TULSI Algebraic Geometry Meeting, SISSA, Trieste, 12/17
Spaces of matrices of constant rank, vector bundles, and truncated graded modules
17. Università Politecnica delle Marche, Ancona, 11/17
Un nuovo approccio allo studio dei tensori ortogonalmente decomponibili

18. Politecnico di Torino, 09/17
Spaces of matrices of constant rank, vector bundles, cones of morphisms, and truncated graded modules
19. GTM Seminar "Some Topics in CA and AG", Genova, 02/17
Orthogonal and unitary tensor decomposition from an algebraic perspective
20. "Christmas Workshop on Quivers, Moduli Spaces and Integrable Systems", Genova, 12/16
Moduli spaces of framed sheaves on (p, q) -toric singularities
21. University of Ljubljana, 11/16 – *Orthogonal and unitary tensor decomposition from an algebraic perspective*
22. "Joint Meeting Brazil - Italy in Mathematics", Special session "Algebraic Geometry", Rio de Janeiro, 08/16
Orthogonal and unitary tensor decomposition from an algebraic perspective
23. Institut des Hautes Études Scientifiques, Bures-sur-Yvette (Essonne), 06/16
Orthogonal and unitary tensor decomposition from an algebraic perspective
24. Conference "Mediterranean Complex Projective Geometry", Carry le Rouet (Provence), 05/16
Spaces of matrices of constant rank via cones of morphisms and truncated graded modules
25. University of Western Ontario, London, Canada, 04/16
Orthogonal and unitary tensor decomposition from an algebraic perspective
26. SISSA, Trieste, 03/16 – *Orthogonal and unitary tensor decomposition from an algebraic perspective*
27. Università di Firenze, 02/16 – *Un nuovo approccio allo studio dei tensori ortogonalmente decomponibili*
28. Università di Trieste, 02/16 – *Spaces of matrices of constant rank and graded modules*
29. Technische Universiteit Eindhoven, 01/16 – *Orthogonal and unitary tensor decomposition*
30. "2016 AMS Joint Mathematics Meeting", Special Session "Nonlinear Algebra", Seattle, 01/16
Unitarily decomposable tensors
31. "Algebra and Geometry Meeting MAG2015", Universitat de Barcelona, 12/15
Spaces of matrices of constant rank, vector bundles, and graded modules
32. "AMS-EMS-SPM International Meeting 2015", Special Session "Vector Bundles on Projective Varieties", Oporto, 06/15 – *Orthogonal instantons and skew-Hamiltonian matrices*
33. Intercity Number Theory Seminar, Amsterdam, 05/15 – *Linear spaces of matrices of constant rank*
34. Technische Universiteit Eindhoven, 07/14 – *Spaces of constant rank matrices*
35. Universidade Estadual de Campinas, 04/14 – *Linear spaces of skew-symmetric matrices and instantons*
36. Universidade Estadual de Campinas, 03/14 – *Orthogonal bundles and skew-Hamiltonian matrices*
37. Christmas Workshop, Università di Milano, 12/13 – *Linear spaces of matrices of constant rank*
38. Università di Torino, 10/13 – *Fibrati ortogonali e matrici anti-Hamiltoniane*
39. Jagellonian University, Krakow, 06/13 – *Orthogonal bundles and skew-Hamiltonian matrices*
40. Young Researchers Colloquium, IMPAN, Warsaw, 05/13
Introduction to quiver representations and Gabriel's theorem
41. MIMUW University of Warsaw, 04/13 – *Orthogonal bundles and skew-Hamiltonian matrices*

42. IMPANGA, Warsaw, 03/13 – *Spaces of matrices of constant rank and instanton bundles*
43. Texas A&M University, 02/13 – *Spaces of matrices of constant rank and instantons*
44. SISSA, Trieste, 01/13 – *Spaces of matrices of constant rank and instantons*
45. Université de Pau et des Pays de l'Adour, 12/12 – *Fibrés orthogonaux et matrices skew-Hamiltoniennes*
46. Institut Fourier, Grenoble, 10/12 – *Spaces of matrices of constant rank and instantons*
47. Università di Trieste, 03/12 – *Quiver representations, homogeneous bundles and the BGG resolution*
48. SISSA, Trieste, 01/12 – *Moduli spaces of orthogonal bundles*
49. Università di Trieste, 06/11 – *Secanti di Grassmanniane e Grassmanniane Lagrangiane*
50. University of Texas at Austin, 12/10 – *Homogeneous vector bundles and quivers*
51. Colorado State University at Fort Collins, 11/10
Secant varieties and the Waring problem and Secants of Lagrangian Grassmannians
52. UMass Amherst, 10/10 – *Homogeneous vector bundles and quivers*
53. Texas A&M University, 09/10 – *Secants of Lagrangian Grassmannians*
54. Università di Firenze, 07/10 – *Secanti di Grassmanniane Lagrangiane*
55. Università di Trieste, 06/09 – *Coomologia di fibrati vettoriali omogenei e rappresentazioni di quivers*
56. Università di Firenze, 06/09 – *Quiver representations and the BGG resolution*
57. Northeastern University, Boston, 04/09 – *Cohomology of homogeneous v.b. via quiver representations*
58. Texas A&M University, 03/09 – *Simplicity and stability of tangent bundles on rational homogeneous varieties*
59. Conference “Geometric Methods in Representation Theory”, Institut Fourier, Grenoble, 06/08
Quivers and homogeneous vector bundles on flag manifolds
60. Conference “Giornate di Geometria Algebrica e argomenti correlati IX”, Levico Terme, 05/08
Fibrati vettoriali omogenei su varietà di bandiera e rappresentazioni di quivers
61. Università di Firenze, 05/08 – *Rappresentazioni di quivers e fibrati omogenei*
62. Conference “Progressi Recenti in Geometria Reale e Complessa”, Levico Terme, 10/06
Il fibrato di Horrocks-Mumford ristretto ai piani
63. Workshop “Giornata Informale di Geometria Algebrica”, Università di Firenze, 04/05
Risoluzioni per le restrizioni del fibrato di Horrocks-Mumford ai piani

Contributed Talks (Accepted talk proposals)

64. Conference “Moduli Spaces in AG and MP”, Chern Institute of Math., Tianjin, 09/15
Orthogonal instantons and skew-Hamiltonian matrices
65. Conference “VBAC 2013, Vector Bundles on Algebraic Curves”, SISSA, Trieste, 06/13
Spaces of matrices of constant rank and instanton bundles
66. Conference “MEGA, Effective Methods in Algebraic Geometry”, Frankfurt, 06/13
Spaces of matrices of constant rank and instanton bundles

67. Workshop “Syzygies in Berlin”, 05/13 – *Spaces of matrices of constant rank and instanton bundles*
68. Workshop on “Moduli Spaces and Mathematical Physics”, CIMAT, Guanajuato, 01/13
Orthogonal bundles, skew-Hamiltonian matrices, and determinantal varieties
69. Workshop on “Invariant Theory and Projective Geometry”, CIRM, Trento, 09/12
Linear systems of skew-symmetric matrices of constant rank and instanton bundles
70. Conference “GAeL XVII, Géométrie Algébrique en Liberté”, Leiden, 06/09
Simplicity and stability of tangent bundles on rational homogeneous varieties
71. Conference “GAeL XVI, Géométrie Algébrique en Liberté”, Aranjuez, 04/08
Homogeneous vector bundles and quiver representations

5 Teaching & Supervising Experience

Graduate level

- A.Y. 2019-2020 and A.Y. 2020-2021, joint PhD program in Pure and Applied Mathematics of Politecnico di Torino and Università degli Studi di Torino: *Spaces of matrices, from classical theory to applications in differential geometry, mathematical physics, numerical analysis.*
- August 2019, Third Research School on Commutative Algebra and Algebraic Geometry Applied Algebraic Geometry, Zanjan, IR. Course’s title: *Spaces of singular matrices and applications.*
<https://iasbs.ac.ir/%7Erscaag/rscaag3/>

Undergraduate level

- Politecnico di Torino, Algebra Lineare e Geometria, A.Y. 2016-2017, 2017-2018, 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023;
- Politecnico di Torino, Linear Algebra and Geometry (in English), A.Y. 2021-2022, 2022-2023, 2023-2024;
- Politecnico di Torino, Istituzioni di Algebra e Geometria, A.Y. 2019-2020, 2020-2021, 2023-2024.
- Università degli Studi di Trieste, titolare del corso Matematica per il CdL Farmacia, A.Y. 2013-2014, 2014-2015.
- Texas A&M University, Business Mathematics 1 - Math 141, Fall 2008, Fall 2010, Spring 2011;
- Texas A&M University, Calculus I - Math 151, Fall 2009, Spring 2010;
- Texas A&M University, Linear Algebra - Math 304, Spring 2009.

Teaching Assistant

- A.Y. 2014-2015, Mastermath, joint Dutch Universities Master program: Commutative Algebra.
- A.Y. 2011-2012, Università degli Studi di Trieste: Geometria 1 per il CdL Matematica e Fisica
- A.Y. 2006-2007, Università degli Studi di Firenze: Geometria per il CdL Ingegneria Meccanica
- Spring 2006, UCLA: Calculus of Several Variables - Math 32a
- Spring 2006, UCLA: Introduction to Topology - Math 121

Supervisor

- PhD students:
 - o Stefano Canino (co-supervised with E. Carlini), Joint PhD program in Pure and Applied Mathematics, Politecnico di Torino and Università degli Studi di Torino.
- BS-level undergraduate thesis at Politecnico di Torino: 13 students supervised in the years 2020-2023.
- BS-level undergraduate thesis at Università di Trieste, 1 student supervised in 2011.

6 Organizational Experience

Seminars

- Part of the “Colloquia committee” at the Department of Mathematics, Politecnico di Torino, from October 2017.
- Co-organizer, Geometry Seminar Trieste-Udine, Università degli Studi di Trieste and Università di Udine, September 2011-January 2013, bi-weekly meetings.
- Co-organizer, “Algebra, Combinatorics and Algebraic Geometry Seminar”, TAMU, Spring 2011, weekly meetings.

Schools and workshops

I am/have been part of the organizing committee of the following events:

- Trieste Algebraic Geometry Summer School (TAGSS) 2024 – Tropical Geometry and Related Topics, to be held at ICTP, Trieste, in September 2024. Courses by M. Melo and M. Panizzut.
<https://staff.polito.it/ada.boralevi/TAGSS/index.html>
<https://indico.ictp.it/event/10503/>
- “Bandoleros 2023 - Seventh Algebraic Geometry Meeting”, held at Politecnico di Torino, October 2023.
<https://sites.google.com/view/bandoleros2023/home-page>
- “Geometry and Commutative algebra”, held at Politecnico di Milano in September 2023.
<https://sites.google.com/view/gc-workshop>
- Workshop “WMath - Woman in Mathematics”, an event in the framework of the Excellence Project 2018-2022, Department of Mathematics, Politecnico di Torino, held in December 2022.
https://areeweb.polito.it/disma-excellence/events_2022/WMath/index.html
- Mini symposium “The geometry of tensors and the maximum likelihood degree”, European Women in Mathematics General Meeting, held at Aalto University, Helsinki, August 2022.
<https://www.europeanwomeninmaths.org/activities/all-our-activities/gm2022/>
- TAGSS IV – Hyperkähler and Prym varieties: classical and new results, held online, ICTP, Trieste, in July 2021. Courses by E. Izadi and A. Ortega.
<http://indico.ictp.it/event/9610/>
- Conference “GO 60, Pure & Applied Algebraic Geometry celebrating Giorgio Ottaviani’s 60th birthday”, an online CIRM event, June 2021.
<http://staff.polito.it/ada.boralevi/G060/index.html>

- Part of the organizing committee of TAGSS III – Algebraic Geometry towards Applications, held at ICTP, Trieste, in July 2019. Courses by A. Dickenstein and S. Di Rocco.
<http://indico.ictp.it/event/8695/>
- Workshop “Tensors”, held at Politecnico di Torino, September 2018.
http://www.polito.it/disma-excellence/tensors/tensors_index.html
- TAGSS II – Summer School on Geometry of Moduli Spaces of Curves, held at ICTP, Trieste, in June 2018. Courses by A. Gibney and O. Tommasi.
<http://indico.ictp.it/event/8319/overview>
- “A Fall Meeting in Algebraic Geometry and Related Topics”, held at Politecnico di Torino, October 2017.
<http://calvino.polito.it/~geosem/Torino2017/conference.htm>
- TAGSS I “SSiEG - Summer School in Enumerative Geometry”, held at SISSA, Trieste, in July 2017. Courses by M. Chiu-chiu Liu and C. Manolache.
<https://staff.polito.it/ada.boralevi/ssieg/homessieg.html>
- Conference “MEGA 2017 – Effective Methods in Algebraic Geometry”, held in Nice–Sophia Antipolis University, June 2017.
<https://mega2017.inria.fr/>
- Summer School “An interdisciplinary approach to tensor decomposition”, held at CIRM-FBK, Trento, in July 2014. Courses by JM Landsberg, B. Mourrain, and K. Ranestad.
<http://www.science.unitn.it/cirm/TensorDecomposition2014.html>
- “Vector Bundles Days II, Pau-Trieste Workshop on Vector Bundles and Related Topics, On the occasion of Emilia Mezzetti’s 60th birthday”, held in Trieste, January 2014.
<http://www.adaboralevi.com/vbd2/vbd2.html>
- “Vector Bundles Days, Pau-Trieste Workshop on Vector Bundles and Related Topics”, held in Pau, April 2013.
<http://lma.univ-pau.fr/equipes/algebre-geometrie/vector-bundle-days/>

7 Service

Professional

- I have served as referee for the following journals: *Advances in Mathematics*, *Bollettino dell’Unione Matematica Italiana*, *International Mathematics Research Notices*, *Journal of Pure and Applied Algebra*, *Linear and Multilinear Algebra*, *Rendiconti del Circolo Matematico di Palermo*, *Rendiconti del Seminario Matematico di Torino*, *Special Matrices*, *Transactions of the AMS*.
- I have served as expert reviewer for a “Preludium” grant proposal submitted to the Narodowe Centrum Nauki (National Science Centre, Poland).
- I have served as expert reviewer for a C1 4 year research project proposal submitted to the Research Council of KU Leuven, Belgium.
- I served as committee member for the PhD thesis defense of Magnus Vodrup, University of Bergen (September 2021).
- I am a reviewer for the American Mathematical Society.

Departmental

- I was a member of the scientific committee for the *Progetto di eccellenza 2018–2022, Modellizzazione, simulazione, predizione, controllo*, Department of Mathematics, Politecnico di Torino.

Editorial

- I have served as guest editor for the journal *Rendiconti dell'Istituto di Matematica dell'Università di Trieste*, Volume 54, Section 2, containing the proceedings of the "Trieste Algebraic Geometry Summer School (TAGSS) IV – Hyperkähler and Prym varieties: classical and new results".

Professional societies

- Unione Matematica Italiana
- Gruppo Nazionale per le Strutture Algebriche, Geometriche e le loro Applicazioni (Istituto Nazionale di Alta Matematica)
- European Women in Mathematics

Personal Information

- *Citizenship*: Italian (Born: Florence, Italy)
- *Date of birth*: September 17th, 1981
- *Languages*: Italian (native speaker), English (excellent), French (excellent), German (elementary), Spanish (elementary).
Certificate of Proficiency in English, University of Cambridge, UK, December 1998.