

# CURRICULUM VITAE - DANIELE AGOSTINI

April 12, 2021

## PERSONAL DATA

**Date of birth:** December 24, 1989.

**Place of birth:** Chiaravalle, Italy.

**Citizenship:** Italian.

**Webpage:** <https://personal-homepages.mis.mpg.de/agostini/>

**Email:** daniele.agostini@mis.mpg.de

## POSITIONS

**October 2020 - September 2025:** Research Group Leader (W2, equivalent to Associate Professor) at the Max-Planck-Institut for Mathematics in the Sciences, Leipzig.

**October 2018 - September 2020:** Postdoc in the Algebraic Geometry group at the Humboldt-Universität zu Berlin.

**April 2018 - September 2018:** Postdoc in the Nonlinear Algebra group at the Max-Planck-Institut for Mathematics in the Sciences, Leipzig.

## EDUCATION AND DEGREES

**August 2014 - July 2018 :** PhD studies in Mathematics at the Humboldt-Universität zu Berlin. Advisor: Prof. Dr. Gavril Farkas. Member of the Berlin Mathematical School, of the IRTG 1800 and of the DFG Schwerpunkt 1489.

**October 2011 - December 2014 :** *Diploma di Licenza* in Mathematics at the Scuola Normale Superiore, Pisa. Mark: 70 /70.

**October 2011 - May 2014 :** MSc (*Laurea Magistrale*) in Mathematics at the University of Pisa. Mark: 110/110 cum laude. Title of thesis: *Asymptotic syzygies of algebraic varieties*. Advisor: Prof. Giorgio Ottaviani.

**October 2008 - September 2011 :** BSc (*Laurea Triennale*) in Mathematics at the University of Pisa. Mark: 110/110 cum laude. Title of thesis: *Normalization of Noetherian rings* (in italian). Advisor: Prof. Patrizia Gianni.

## AWARDS

**October 2017 - November 2017:** DAAD scholarship for a research visit at Stony Brook University, USA.

**August 2014 - July 2017 :** PhD scholarship of the International Training and Research Group *Moduli and Automorphic Forms* of the DFG.

**October 2011 - December 2014 :** *Allievo Ordinario* at the Scuola Normale Superiore di Pisa.

## RESEARCH

I am a mathematician working in algebraic geometry, with a strong focus on interactions with other areas of mathematics such as probability, statistics, mathematical physics and their applications. I am broadly interested in questions from classical algebraic geometry, such as syzygies, the geometry of curves and surfaces, and rationality problems for moduli spaces. Another prominent theme of my research is Riemann's theta function, and its various aspects in geometry, probability, numerics and mathematical physics. I have also worked in algebraic statistics.

## PUBLICATIONS AND PREPRINTS

13. D. Agostini, C. Fevola, Y. Mandelstam, B. Sturmfels. *KP Solitons from Tropical Limits*, to be presented at MEGA 2021, Tromsø.
12. D. Agostini, T. O. Çelik, B. Sturmfels. *The Dubrovin threefold of an algebraic curve*, Nonlinearity (to appear).
11. D. Agostini, I. Barros. *Pencils on surfaces with normal crossings and the Kodaira dimension of  $\overline{\mathcal{M}}_{g,n}$* , Forum of Mathematics SIGMA, vol. 9 (2021), 1-22.
10. D. Agostini, L. Chua. *Computing Theta Functions with Julia*, Journal of Software for Algebra and Geometry, vol. 11 (2021), 41-51.
9. D. Agostini. *Asymptotic syzygies and higher order embeddings*, IMRN (2020).
8. D. Agostini, T. O. Çelik, J. Struwe, B. Sturmfels. *Theta surfaces*, Vietnam Journal of Mathematics (2020).
7. D. Agostini, C. Améndola, K. Ranestad. *Moment identifiability of homoscedastic Gaussian mixtures*, Foundations of Computational Mathematics (2020).
6. D. Agostini. *On the Prym map for cyclic covers of genus two curves*, Journal of Pure and Applied Algebra, vol. 224 (2020).
5. D. Agostini, L. Chua. *On the Schottky problem for genus five Jacobians with a vanishing theta null*, Ann. Scuola Norm. Scienze (to appear).
4. D. Agostini, C. Améndola. *Discrete Gaussian distributions and theta functions*, SIAGA, vol. 3 (2019), 1-30.
3. D. Agostini, A. Küronya, V. Lozovanu. *Higher syzygies on surfaces with numerically trivial canonical bundle*, Math. Zeit., vol. 293 (2019), 1071-1084.
2. D. Agostini. *A note on homogeneous ideals of polarized abelian surfaces*, Bull. London Math. Soc., vol. 49 (2017), 220-225.
1. D. Agostini, D. Alberelli, F. Grande, P. Lella. *The maximum likelihood degree of Fermat hypersurfaces*, Journal of Algebraic Statistics, vol. 6 (2015), 108-132.
  
15. D. Agostini, T. Çelik, D. Eken. *Numerical reconstruction of curves from their Jacobians*, arXiv.
14. D. Agostini, I. Barros, K.-W. Lai. *On the irrationality of moduli spaces of K3 surfaces*, arXiv.

## ORGANIZATIONAL ACTIVITIES

**September 30 - October 4, 2019:** Organizer of the *Fall School Algebraic Geometry+* in Berlin.

The school featured four courses from G. Blekherman, D. Chen, G. Ottaviani and B. Sturmfels. It was attended by around 60 international participants. The organisers were T. Krämer, M. Panizzut, R. Sinn and myself.

**July 9 -10, 2019:** Organizer of a minisymposium on *Riemann Surfaces* at the *SIAM Applied Algebraic Geometry* conference in Bern.

The mini symposium featured 8 invited talks. It was attended by around 30 participants. The organisers were T. Çelik, C. Klein, E. Sertöz and myself.

**February 17 -19, 2016 :** Organizer of the *4th BMS Student Conference* at the TU Berlin.

The conference featured 15 student talks and 2 talks from experienced researchers. It was attended by around 90 participants. The organisers were M. Curran, E. Katsigianni, E. Romero, N. Palic and myself.

**January 2015 - July 2017 :** Organizer of the Student Seminar in Algebraic Geometry at the Humboldt-Universität zu Berlin.

## INVITED TALKS AT WORKSHOPS, CONFERENCES AND OTHER EVENTS

**September 20 - 24, 2021:** *Riposte Armonie: algebraic geometry together with Ciro Ciliberto*, Cetraro.

**June 20 - 26, 2021:** *Classical Algebraic Geometry*, Oberwolfach (invited participant).

**August 26 - 28, 2020:** *A workshop on abelian varieties*, Roma (postponed).

**July 13 - 16, 2020:** *International Congress on Mathematical Software*, Braunschweig.

**June 11 - 13, 2020:** *Algebraic and Arithmetic Geometry Meeting*, München (canceled).

**October 7 - October 11, 2019:** *Algebraic Geometry+ Workshop*, Berlin.

**April 15 - 19, 2019:** *Rationality of algebraic varieties*, Schiermonnikoog.

**May 29 - June 1, 2018:** *Giornate di Geometria Algebraica ed Argomenti Correlati XIV*, Genova.

**December 22, 2016:** *Algebraic Geometry and Representation Theory in Rome*, Roma.

Various seminar talks in Europe, the USA and Japan.

**September 24-28, 2018:** short talk at the *Summer school in Algebraic Statistics*, University of Tromsø, Tromsø.

**July 17, 2018:** Short talk at *Classical Algebraic Geometry*, Oberwolfach.

**October 14, 2017:** Poster at *AGNES*, Northeastern University.

**September 7, 2017:** Poster at the *School (and Workshop) on Syzygies*, Trento.

## VISITS

**March 2020:** Visiting Prof. Bernard Deconinck at the University of Washington, Seattle.

**October - December, 2017:** Visiting Prof. Robert Lazarsfeld at Stony Brook University.

**April - September, 2016:** Visiting Prof. Dr. Carel Faber at the Universiteit Utrecht.

**April - July, 2014:** Visiting Prof. Dr. Frank-Olaf Schreyer at the Universität des Saarlandes.

#### TEACHING ACTIVITY

**Summer Semester 2021:** Organizer of a reading group on *Foundations of Algebraic Geometry*.

**Winter Semester 2020 - 2021:** Teacher of the course *Riemann Surfaces and Algebraic Curves*, together with Prof. Rainer Sinn, of the Universität Leipzig

**Summer semester 2020:** Teaching assistant for the course *Linear Algebra II*, at the Humboldt-Universität zu Berlin. Instructor: Prof. Dr. Bruno Klingler. Teaching assistant for the course *Algebraic Geometry II*, at the Humboldt-Universität zu Berlin. Instructor: Prof. Dr. Gavril Farkas.

**Winter semester 2019-2020:** Teaching assistant for the course *Linear Algebra I*, at the Humboldt-Universität zu Berlin. Instructor: Prof. Dr. Bruno Klingler.

**Summer semester 2019:** Teacher of the course *Algebraic Number Theory*, at the Humboldt-Universität zu Berlin. This course was voted by the students as the **second best** in the whole department.

**Winter semester 2018-2019:** Teaching assistant for the course *Analysis I*, at the Humboldt-Universität zu Berlin. Instructor: Dr. Alexander Fauck.

**2012-2013:** Tutor for the course *Algebra 1*, at the University of Pisa. Instructor: Prof. Ilaria del Corso.

#### STUDENTS MENTORED AND SUPERVISED

**2020 - 2023 (expected)** PhD supervisor of Claudia Fevola at the MPI Leipzig, together with Bernd Sturmfels.

I have mentored PhD students at the MPI Leipzig and at the HU Berlin.

I have supervised 2 Bachelor theses at the HU Berlin and I am currently supervising another one. I have co-advised one Master Thesis.

#### SERVICE AND OTHER ACTIVITIES

**October 2020 - December 2020:** Member of the Postdoc admission committee at the MPI Leipzig.

**October 2018 - September 2020:** Postdoctoral member of the MATH+ Excellence initiative in Berlin. In particular, I was involved in the organisation of the special semester in Algebraic Geometry of the MATH+ initiative.

**January - December, 2015:** Student representative at the Berlin Mathematical School.

Reviewer for various international publications.

**November 10 - 30, 2012:** Popularization activities within the exhibit *Poliedri in Pezzi*, Pisa, Italy.

#### OTHER SKILLS

Native speaker of Italian. Very good knowledge of English and good knowledge of German.

Programming experience in Macaulay2, Julia, Python.