Emre Can Sertöz

Curriculum Vitae

Professional experience

- **Assistant Professor (universitair docent 2)**, 2023-09-01 (tenure-track)

  - *Employer:* Leiden University, Leiden, The Netherlands

- **Postdoctoral Researcher**, 2021-09-01 to 2023-08-31

  - *Employer:* Leibniz University Hannover, Hannover, Germany
  - *Mentor:* Matthias Schütt

- **Postdoctoral Researcher**, 2020-10-01 to 2021-08-31

  - *Employer:* Max Planck Institute for Mathematics, Bonn, Germany
  - *Mentor:* Daniel Huybrechts

- **Postdoctoral Researcher**, 2020-04-01 to 2021-09-30

  - *Employer:* Leibniz University Hannover, Hannover, Germany
  - *Mentor:* Matthias Schütt

- **Postdoctoral Researcher**, 2017-05-01 to 2020-03-31

  - *Employer:* Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany
  - *Mentors:* Bernd Sturmfels, Mateusz Michałek

Education

Ph.D. in Mathematics, Humboldt University of Berlin, Germany, 2013-12-06 to 2017-09-25

  - *Title:* Enumerative geometry of double spin curves
  - *Advisor:* Gavril Farkas
  - *Co-advisor:* Gerard van der Geer

M.Sc. in Mathematics, Humboldt University of Berlin, Germany, 2011-10-01 to 2013-11-05

  - *Title:* Hurwitz numbers
  - *Advisor:* Gavril Farkas

B.Sc. in Mathematics, Bilkent University, Turkey, 2007-09-01 to 2011-06-16

  - *Title:* Fubini–Study Metric and the Fermat Quintic
  - *Advisor:* Sema Salur

International Baccalaureate (IB) Diploma, BUPS/BLIS, Ankara, Turkey, 2007-08-08.

Awards and Funding

- *Funding for a Banff International Research Station 5-Day workshop in 2024* on "Computational Geometry", joint with Alessio Corti, Elana Kalashnikov, Alexander Kasprzyk, Marta Panizzut.

- *Oberwolfach Research Fellowship 2023*, joint with Spencer Bloch and Robin de Jong.

- *Seal of Excellence*, Marie Skłodowska-Curie actions 2019.

- *International Fulbright Science & Technology Award 2011*, Turkey's candidate, ranked as No.1 Offered a Fulbright fellowship. I chose to complete my studies in Humboldt with Prof. Farkas.

- *Orhan Alisbah Fellowship Award*, Bilkent University 2010,
  Awarded by the Department of Mathematics of Bilkent to the most successful undergraduate student.

Scholarships

- *Research fellowship*, Space-Time-Matter, 2016-11-01 to 2016-12-31.

- *Scholarship of the International Research Training Group*, GRK 1800, 2013-11-01 to 2016-10-31.

- *Scholarship of the Berlin Mathematical School (BMS)*, Phase I, 2011-10-01 to 2013-09-30.

- *Merit Scholarship*, Bilkent University, Top 1%, Full Scholarship, 2008 to 2011.

Research articles

Selected works are marked with an asterisk (*).

1. *Computing heights via limits of Hodge structures*, with S. Bloch and R. de Jong.
   Experimental Mathematics, 2023. arXiv:2208.00017.

2. *Heights on curves and limits of Hodge structures*, with S. Bloch and R. de Jong.
   Journal of the London Mathematical Society, 108(1), 2023. arXiv:2206.01220.

3.* *Separation of periods of quartic surfaces*, with P. Lairez.
   Algebra & Number Theory, 17(10), 2023. arXiv:2011.12316.

4. *Deep Learning Gauss–Manin Connections*, with K. Heal, A. Kulkarni.
   Advances in Applied Clifford Algebras, 32(24), 2022. arXiv:2007.13786.

5. *Effective obstruction to lifting Tate classes from positive characteristic*, with E. Costa.
   in "Arithmetic geometry, number theory, and computation," Simons Symposia, Springer.
   Pages 293–333, year 2021. arXiv:2003.11037.

6. *An octanomial model for cubic surfaces*, with M. Panizzut, B. Sturmfels.
   Le Matematiche, 75(2), 2020. arXiv:1908.06106.

7. *On reconstructing subvarieties from their periods*, with H. Movasati.
   Rendiconti del Circolo Matematico di Palermo, II. Series, 70(3), 2021. arXiv:1908.03221.

8.* *A numerical transcendental method in algebraic geometry*, with P. Lairez.
   SIAM Journal on Applied Algebra and Geometry, 3(4), 2019. arXiv:1811.10634.

9.* *Prym varieties of genus four curves*, with N. Bruin.
   Transactions of the American Mathematical Society, 373, 2020. arXiv:1808.07881.

10. *Certifying reality of projections*, with J. Hauenstein, A. Kulkarni, S. Sherman.
    Lecture Notes in Computer Science, 10931, 2018. arXiv:1804.02707.

11.* *Computing periods of hypersurfaces.*
    Mathematics of Computation, 88(320), 2019. arXiv:1803.08068.

12. *Computing images of polynomial maps*, with C. Harris and M. Michalek.
    Advances in Computational Mathematics, 45, 2019. arXiv:1801.00827.

13. *A compactification of the moduli space of multiple-spin curves.*
    Geometria Dedicata, 217(80), 2023. arXiv:1701.02303.

14. *Enumerative geometry of double spin curves.* PhD Thesis.
    Published electronically by HU library, 2017.

Teaching experience

1. *Differentiable Manifolds*, Leiden, Spring 2024.

2. *Introduction to Statistics*, The Hague (Leiden University College), Fall 2023.

3. *Linear Algebra I*, Hannover, Tutor during Fall 2022.

4. *Calculus for Engineers II (in German)*, Hannover, Tutor during Spring 2022.

5. *Computational Algebraic Geometry*, Hannover, Fall 2021,
   Designed my own lecture material and prepared it to be viewed online.
   Publicly available on YouTube.

6. *Calculus for Engineers II (in German)*, Hannover, Spring 2020,
   I was one of the tutors and I prepared a final exam.

7. *Hodge theory and periods of varieties*, MPI MiS, Spring 2019, lecturer.

8. *Representation theory and complex geometry*, MPI MiS, Fall 2017, lecturer (joint with J. Torres).

9. *Intersection Theory*, Fall 2013, Humboldt University, tutor for exercise sessions.

10. *Intersection Theory*, Fall 2012, Humboldt University, frequent substitute for main lecturer.

11. *Multivariable Calculus*, Spring 2011, Bilkent University, tutor for exercise sessions.

Supervision

- Advised the master's thesis of Kamillo Ferry (Leibniz University Hannover), 2022.

- Advised the master's thesis of Samuele Pollaci (University of Bonn), 2021–2022.

- Advised the master's thesis of Rafael Mohr (Leipzig University), 2019–2020.

EXTENDED RESEARCH VISITS (lasting 2 weeks or more)

- Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil

    - Visiting researcher, 2018-10-04 to 2018-10-22
    - Visiting researcher, 2019-05-24 to 2019-06-10

- Notre Dame, South Bend, USA

    - Visiting researcher, 2018-02-02 to 2018-02-18

- Trimester Program "Periods in Number Theory, Algebraic Geometry and Physics"

    - *Hausdorff Research Institute for Mathematics*, Bonn, 2018-02-25 to 2018-03-31

- IRTG Exchange program, Visiting Graduate Student

    - *Korteweg-de Vries Institute for Mathematics*, Amsterdam, 2015-11-01 to 2016-05-01

SELECTED TALKS (Out of 70+)

1. *Local non-Archimedean height pairing via tropical biextensions*, Intercity Seminar on Arakelov Geometry 2022, Madrid/Spain, 2022-09-13.

2. *Computing limit mixed Hodge structures*, Computational Geometry workshop, Nottingham/UK, 2022-08-29.

3. *Arithmetic self-intersections and canonical limit mixed Hodge structures*, Conference on Arakelov Geometry, Regensburg/Germany, 2021-09-07.

4. *Separation of periods of quartic surfaces*, Oberwolfach workshop Explicit Methods in Number Theory, Oberwolfach/Germany, 2021-07-22.

5. *Separating periods of quartic surfaces*, Annual meeting of the German Mathematical Society (DMV), Chemniz/Germany, 2020-09-17.

6. *Down to characteristic p and then back up again: computations with the p-adic obstruction map*, Non-linear Algebra Seminar Online (NASO), 2020-04-07.

7. *On reconstructing subvarieties from their periods*, Number Theory Seminar at MIT, Cambridge/USA, 2020-01-07.

8. *On reconstructing subvarieties from their periods*, Algebra and algebraic geometry seminar at UiO, Oslo/Norway , 2019-11-14.

9. *Computing transcendental invariants of hypersurfaces*, Minisymposium: "Numerical methods in algebraic geometry", SIAM Conference on Applied Algebraic Geometry 2019, Bern/Switzerland, 2019-07-11.

10. *Computing periods of hypersurfaces*, Colloquium for "Periods, Moduli spaces and the Arithmetic of Algebraic Varieties", Mainz/Germany, 2019-06-27.

11. *Numerical transcendental methods for computing Picard and Hodge groups*, Number Theory Seminar at MIT, Cambridge/USA, 2019-01-08.

12. *Numerical methods in transcendental algebraic geometry*, Seminar "Geometria Diferencial" at IMPA, Rio/Brazil, 2018-10-16.

13. *Computing periods of hypersurfaces*, Imperial College, London/UK, 2018-04-18.

14. *Computing periods of hypersurfaces*, Applied Math Seminar, Notre Dame/USA, 2018-02-06.

15. *Computing periods of hypersurfaces*, Seminar "Computations and Proofs", Paris/France, 2017-11-20.

16. *Enumerative geometry of double spin curves*, in KTH & SU Algebra and Geometry Seminar, Stockholm/Sweden, 2017-11-08.

17. *Enumerative geometry of theta characteristics*, Summer School in Enumerative Geometry, Trieste/Italy, July 2017.

18. *Enumerative geometry of double spin curves*, ODTÜ–Bilkent Algebraic Geometry Seminar, Ankara/Turkey, October 2017.

ORGANIZATIONAL EXPERIENCE

- Organizing *The Inner Circle* research meeting at the Institute for Algebraic Geometry, 2022-2023.

- Co-organizer for *Algebraic geometry through numerical computation*, ICMS 2020, 13–17 July 2020.

- Co-organizer for *Minisymposium on Riemann Surfaces*, SIAM, 9–13 July 2019, Bern/Switzerland.

- Co-editor of "Special Issue on Twenty-Seven Questions about the Cubic Surface" in *Le Matematiche*, Vol 75 No 2 (2020).

- Co-organizer for *Cubic surfaces event* in Oslo, 13 May 2019.

- Master administrator for the *Cubic Surfaces Wiki* (http://cubics.wikidot.com).

- Co-organizer for *Non-Linear Algebra Seminar*, December 2018 to May 2019, Leipzig/Germany.

- Co-organizer for *Numerical Computing in Algebraic Geometry*, 13–17 August 2018, Leipzig/Germany.

- Co-organizer for *Berlin Mathematical School Student Conference*, 2015-02-18/20, Berlin/Germany.

SERVICE

- In *Postdoc Hiring Committee* for Max Planck Institute MiS, Non-Linear Algebra Group, 2020.

- Referee for Collectanea Mathematica, Experimental Mathematics, Journal of Symbolic Computation, International Congress for Mathematical Software, International Symposium on Symbolic and Algebraic Computation.

- Student representative at Berlin Mathematical School, 2014.

LANGUAGES

- *Turkish:* Native.

- *English:* Fluent.

- *German:* Upper Intermediate, CEF B2 Level.

- *Dutch:* Beginner.