# Curriculum Vitæ
# Oskar Henriksson

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| **PROFILE** | I am interested in applied, combinatorial and computational aspects of algebraic geometry. Among other things, this includes the use of numerical, toric and tropical techniques in the study of parametric polynomial models appearing in biology and statistics. |

**EDUCATION**

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| **Ph.D. in Mathematics at the University of Copenhagen** | **Jan 2022–** |
| Advisor: Elisenda Feliu. | |
| **M.Sc. in Mathematics at the University of Copenhagen** | **Sep 2018–Jan 2021** |
| Advisors: Nathalie Wahl and Andrea Bianchi. | |
| **B.Sc. in Mathematics at Lund University** | **Sep 2013–Aug 2018** |
| Advisor: Arne Meurman. | |

**RESEARCH VISITS**

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| **Institute for Mathematical and Statistical Inovation, Chicago** | **Oct 2023** |
| The "Varieties from Statistics" apprenticeship. Mentor: Bernd Sturmfels. | |
| **MPI Mathematics in the Sciences, Leipzig** | **Sep 2023** |
| **Aalto University, Espoo** | **Aug–Dec 2021** |
| Erasmus+ scholarship. Mentor: Kaie Kubjas. | |

**PAPERS**

**Moment varieties from inverse Gaussian and gamma distributions**
with Lisa Seccia, and Teresa Yu. Preprint: 2312.10433 [math.AG].

**Dimension and degeneracy of solutions of parametric polynomial systems arising from reaction networks**
with Elisenda Feliu, and Beatriz Pascual Escudero. Preprint: 2304.02302 [math.AG].

**3D genome reconstruction from partially phased Hi-C data**
with Diego Cifuentes, Jan Draisma, Annachiara Korchmaros, and Kaie Kubjas.
*Bulletin of Mathematical Biology* **86**, 33 (2024).

**RESEARCH TALKS**

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| **Tropical root bounds and generalized polyhedral start systems** | **Apr 2024** |
| Software demo. Graduate Student Meeting in Applied Algebra and Combinatorics in Berlin. | |
| **Secant varieties in statistics: identifiability of mixture distributions** | **Mar 2024** |
| Applied Algebra and Geometry Seminar at the University of Copenhagen. | |
| **Finding all steady states with tropical geometry** | **Nov 2023** |
| Seminar on the Mathematics of Reaction Network, online. | |
| **Tropical computation of the steady state degree** | **Oct 2023** |
| Lightning talk at IMSI, Chicago. | |
| **Moment varieties of classical distributions** | **Oct 2023** |
| "Varieties from statistics" at IMSI, Chicago. | |
| **Generic dimension and optimal start systems for reaction networks** | **Sep 2023** |
| Seminar on Nonlinear Algebra at MPI Leipzig. | |
| **Generic dimension of varieties arising in reaction network theory and 3D genome reconstruction.** Applications of Computer Algebra 2023 in Warsaw. | **Jul 2023** |
| **Improved steady state bounds with tropical and toric methods** | **Jul 2023** |
| "New Approaches to Analyzing Biological Interaction Networks" at SIAM AG23. | |
| **The tropical geometry of parametric polynomial systems** | **Jul 2023** |
| Queer and Trans Mathematicians in Combinatorics in London. | |
| **Detecting and precluding toricity in reaction network theory** | **Aug 2022** |
| 28th Nordic Congress of Mathematicians at Aalto University. | |
| **Detecting and precluding toricity in reaction network theory** | **Aug 2022** |
| Applications of Computer Algebra 2022 in Gebze-Istanbul. | |
| **Geometric perspectives on the steady states of reaction networks** | **Nov 2021** |
| Statistics, Algebra, and Geometry Seminar at Aalto University. | |
| **Toricity in reaction network theory** | **Aug 2021** |
| "Algebraic-Geometric Methods for Reaction Networks" at SIAM AG21. | |

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| **POSTERS** | **Parametric toricity in the positive orthant for steady state varieties** | **Oct 2022** |
| | Workshop on Solving Polynomial Equations and Applications at CWI. | |
| | **Parametric positive toricity of steady state varieties** | **Jul 2023** |
| | SIAM AG23. | |
| **EXPOSITORY TALKS** | **The real spectrum and prime cones** | **Apr 2022** |
| | Reading Seminar on Real Algebraic Geometry at Ghent University. | |
| | **From lattice fans to normal toric varieties** | **Apr 2021** |
| | Toric Geometry Reading Seminar at Ghent University. | |
| | **Unions of tropical hypersurfaces and the Cayley trick** | **Mar 2021** |
| | Reading Seminar in Tropical Combinatorics at the University of Copenhagen. | |
| **TEACHING EXPERIENCE** | **Applied algebra and geometry, Teacher** (Univ. of Copenhagen) | **Fall 2023** |
| | **Experimental mathematics, Teaching Assistant** (Univ. of Copenhagen) | **Fall 2023** |
| | **Commutative Algebra, Teaching Assistant** (Univ. of Copenhagen) | **Spring 2023** |
| | **Applied Algebra and Geometry, Guest Lecturer** (Univ. of Copenhagen) | **Fall 2022** |
| | **General Topology, Teaching Assistant** (University of Copenhagen) | **Spring 2022** |
| | **Organic Chemistry, Teaching Assistant** (Lund University) | **Fall 2015** |
| | **Organic Chemistry, Teaching Assistant** (Lund University) | **Spring 2014** |
| | **Organic Chemistry, Teaching Assistant** (Lund University) | **Fall 2014** |
| **SUPERVISION** | **MSc thesis:** Ignacio Gonzalez Mantecon (Spring 2024, joint with Elisenda Feliu). | |
| **TEACHER TRAINING** | **Introduction to University Pedagogy** (Univ. of Copenhagen, 3 ECTS) | **Summer 2023** |
| | **Teaching mentorship for early-career scientists** (Univ. of Copenhagen) | **Spring 2023** |
| **OUTREACH** | **Gröbner bases in the study of chemical reaction networks** | **Sep 2020** |
| | Part of a popular science lecture series by the xRays network in Unga Forskare. | |
| **ORGANIZATION** | **Copenhagen Applied Algebra and Geometry Seminar** | **Spring 2024** |
| | **Algebraic Methods for Biochemical Reaction Networks** | **Jun 2023** |
| | MSRI Summer School at MPI MiS Leipzig. Teaching assistant. | |
| | **Grad Student Meeting on Applied Algebra and Combinatorics** | **Apr 2023** |
| | Stockholm University and KTH. Joint with Xiangying Chen, Danai Deligeorgaki, Filip Jonsson Kling, Felix Rydell and Mariel Supina. | |
| **SERVICE** | **Refereeing** | **2022–** |
| | Journal of Mathematical Chemistry; SIAM Journal on Applied Mathematics; MEGA. | |
| | **Recruitment committee at Lund University** | **2020–2021** |
| | Student representative for the appointment of two associate professorships in algebra. | |
| **LANGUAGES** | Swedish (native speaker), English (fluent), German (intermediate) and Danish (intermediate). | |
| | Experience from computational algebra work in Julia/OSCAR, Sage, Macaulay2 and Maple, as well as numerical analysis projects in Python/NumPy and MATLAB. | |