

# ASTRID HERREMANS

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## RESEARCH INTERESTS

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Numerical analysis at the intersection of approximation theory and numerical linear algebra (non-orthogonal expansions, sampling theory, rational approximation), using tools from harmonic analysis, functional analysis and random matrix theory.

## EDUCATION

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**PhD in Engineering Science** 2022-2026

KU Leuven, Department of Computer Science

- Advisor: Daan Huybrechs
- Expected date of defense: June 2026
- Teaching assistant for Linear Algebra, Analysis, Fundamentals of Computer Science, Numerical Analysis
- Ombudsperson for the Master in Mathematical Engineering

**Master in Mathematical Engineering** 2020-2022

KU Leuven

- Grade: summa cum laude with the congratulations of the examination committee
- Thesis: *Robust and efficient approximation of functions with singular behaviour*, advised by Daan Huybrechs
- Teaching assistant for Linear Algebra and Analysis

**Bachelor in Engineering Science** 2017-2020

KU Leuven

- Grade: summa cum laude

## PUBLICATIONS AND PREPRINTS

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A. HERREMANS AND B. ADCOCK. *Refinement-based Christoffel sampling for least squares approximation in non-orthogonal bases*. arXiv:2510.08461 (2025).

A. HERREMANS AND D. HUYBRECHS. *Sampling theory for function approximation with numerical redundancy*. arXiv:2501.07470 (2025).

A. HERREMANS AND D. HUYBRECHS. *Efficient function approximation in enriched approximation spaces*. IMA J. Numer. Anal. 45.2 (2025), 673-695.

N. BOULLÉ, A. HERREMANS AND D. HUYBRECHS. *Multivariate rational approximation of functions with curves of singularities*. SIAM J. Sci. Comput. 46 (2024), A3401-A3426.

A. HERREMANS, D. HUYBRECHS AND L.N. TREFETHEN. *Resolution of singularities by rational functions*. SIAM J. Numer. Anal. 61.1 (2023), 2580-2600.

## TALKS AND SEMINARS

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**Applied Mathematics Seminars** November 2025

at the University of Pavia, invited by Umberto Zerbinati and Andrea Moiola

**The 30th Biennial Numerical Analysis Conference** June 2025

at the University of Strathclyde, invited by Marcus Webb and Timon Gutleb

**Numerical Analysis Group Internal Seminar** June 2025

at the University of Oxford, invited by Yuji Nakatsukasa

<b>Challenges, Opportunities, and New Horizons in Rational Approximation</b> plenary talk at the Banff International Research Station (BIRS) invited by Heather Wilber, Anil Damle and Serkan Gugercin	April 2025
<b>PIMS MOCAD seminar</b> at Simon Fraser University, invited by Ben Adcock	March 2025
<b>Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing</b> at the University of Waterloo (contributed talk)	August 2024
<b>More on Harmonic Analysis</b> in Strobl (poster session)	June 2024
<b>SIAM Conference on Applied Linear Algebra</b> at Sorbonne University, invited by Nadiia Derevianko and Heather Wilber	May 2024
<b>Workshop and Summer School on Applied Analysis</b> at TU Chemnitz (contributed talk)	September 2023
<b>Numerical Analysis in the 21st Century</b> in honour of Nick Trefethen's retirement from Oxford at the University of Oxford (contributed talk)	August 2023
<b>Classical Analysis Seminar</b> at the department of Mathematics at KU Leuven, invited by Arno Kuijlaars	March 2023
<b>SIAM Conference on Computational Science and Engineering</b> in Amsterdam (contributed talk)	February 2023
<b>Numerical Analysis Group Internal Seminar</b> at the University of Oxford, invited by Lloyd Nick Trefethen	November 2022

## AWARDS AND GRANTS

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<b>SIAM UKIE prize for best Student Talk</b> by SIAM UKIE <i>Awarded at the 30th Biennial Numerical Analysis Conference</i>	2025
<b>Travel grant for a long stay abroad</b> by Research Foundation Flanders (FWO) <i>Covers a three-month research stay at Simon Fraser University, hosted by Ben Adcock</i>	2025
<b>SIAM Student Travel Grant</b> by SIAM <i>Covers travel and accommodation costs for the SIAM Conference on Applied Linear Algebra</i>	2024
<b>PhD fellowship</b> by Research Foundation Flanders (FWO) <i>Awarded a fully funded four-year PhD fellowship for fundamental research</i>	2023
<b>Best contributed talk</b> by the Faculty of Mathematics at TU Chemnitz <i>Awarded at the Workshop and Summer School on Applied Analysis</i>	2023
<b>Best Student Award</b> by KU Leuven <i>Awarded to the top ten students in the first year of the Bachelor of Engineering Science</i>	2018