ASTRID HERREMANS

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RESEARCH INTERESTS

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

PhD in Engineering Science 2022–2026

KU Leuven, Department of Computer Science

- Advisor: Daan Huybrechs
- Expected date of submission: June 2026
- Teaching in linear algebra, analysis, partial differential equations, numerical analysis and fundamentals of computer science
- 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
- Includes advanced courses in numerical analysis, numerical linear algebra, numerical simulation of PDEs, nonlinear systems and scientific software (Fortran, C++)
- Thesis: *Robust and Efficient Approximation of Functions with Singular Behaviour*, advised by Daan Huybrechs
- Teaching in linear algebra and analysis

Bachelor in Engineering Science 2017–2020

KU Leuven

- Grade: summa cum laude
- Provides a broad foundation in Engineering Sciences with a chosen focus on Computer Science, including courses in programming (Python, Java) and core mathematical subjects

PUBLICATIONS AND PREPRINTS

Reproducible code is made available on my GitHub, primarily in Julia and MATLAB.

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

A selection of my slides can be found on my homepage (astridherremans.eu).

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

Challenges, Opportunities, and New Horizons in Rational Approximation April 2025
plenary talk at the Banff International Research Station (BIRS)
invited by Heather Wilber, Anil Damle and Serkan Gugercin

PIMS MOCAD seminar March 2025
at Simon Fraser University, invited by Ben Adcock

Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing August 2024
at the University of Waterloo (contributed talk)

More on Harmonic Analysis June 2024
in Strobl (poster session)

SIAM Conference on Applied Linear Algebra May 2024
at Sorbonne University, invited by Nadiia Derevianko and Heather Wilber

Workshop and Summer School on Applied Analysis September 2023
at TU Chemnitz (contributed talk)

Numerical Analysis in the 21st Century August 2023
in honour of Nick Trefethen's retirement from Oxford
at the University of Oxford (contributed talk)

Classical Analysis Seminar March 2023
at the department of Mathematics at KU Leuven, invited by Arno Kuijlaars

SIAM Conference on Computational Science and Engineering February 2023
in Amsterdam (contributed talk)

Numerical Analysis Group Internal Seminar November 2022
at the University of Oxford, invited by Lloyd Nick Trefethen

AWARDS AND GRANTS

SIAM UKIE prize for best Student Talk 2025
by SIAM UKIE
Awarded at the 30th Biennial Numerical Analysis Conference

Travel grant for a long stay abroad 2025
by Research Foundation Flanders (FWO)
Covers a three-month research stay at Simon Fraser University, hosted by Ben Adcock

SIAM Student Travel Grant 2024
by SIAM
Covers travel and accommodation costs for the SIAM Conference on Applied Linear Algebra

PhD fellowship 2023
by Research Foundation Flanders (FWO)
Awarded a fully funded four-year PhD fellowship for fundamental research

Best contributed talk 2023
by the Faculty of Mathematics at TU Chemnitz
Awarded at the Workshop and Summer School on Applied Analysis

Best Student Award 2018
by KU Leuven
Awarded to the top ten students in the first year of the Bachelor of Engineering Science