

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 computational harmonic analysis, applied 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 defense: August 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

A. HERREMANS AND B. ADCOCK. *Christoffel sampling for least squares approximation with non-orthogonal bases*. In preparation (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

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