FAU MoD Lecture Series

Nick Trefethen
University of Oxford

Applications of AAA Rational Approximation

Wed. February 1, 2023	10:30H Lecture • 16:30H Chebfun

www.mod.fau.eu

Applications of AAA Rational Approximation
Speaker: Prof. Dr. **Nick Trefethen,** University of Oxford
Organized by: **FAU MoD**, Research Center for Mathematics of Data at
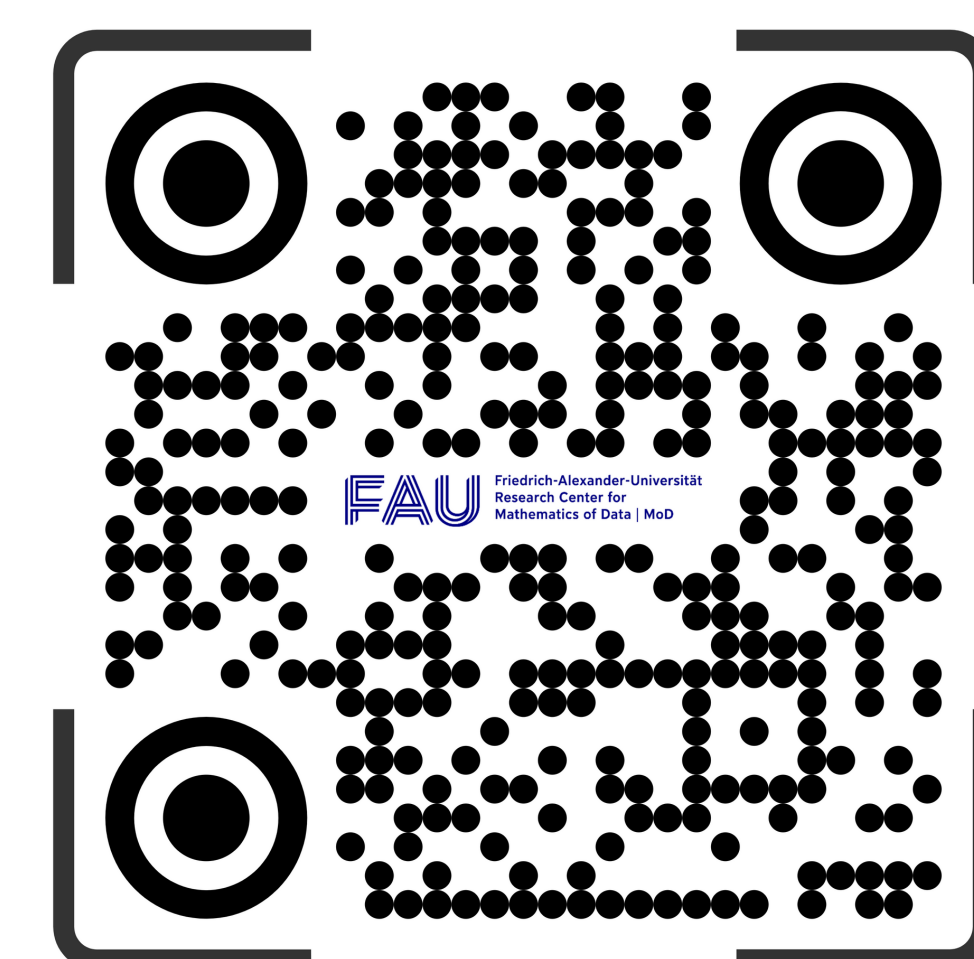Friedrich-Alexander-Universität Erlangen-Nürnberg (Germany)

Abstract. For the first time, a method has recently become available for fast computation of near-best rational approximations on arbitrary sets in the real line or complex plane: the AAA algorithm (Nakatsukasa-Sete-T. 2018). We will present the algorithm and then demonstrate a number of applications, including
• detection of singularities
• model order reduction
• analytic continuation
• functions of matrices
• nonlinear eigenvalue problems
• interpolation of equispaced data
• smooth extension of multivariate real functions
• extrapolation of ODE and PDE solutions into the complex plane
• solution of Laplace problems
• conformal mapping
• Wiener-Hopf factorization
(joint work with Stefano Costa and others)

A Tour of Chebfun. A hands-on introduction session to Chebfun.
If you wish to play along, bring your laptop with Chebfun software pre-installed and ENJOY!
(Links available at the page of the event)

WHEN?
Wednesday February 1, 2023

10:30H Main Lecture
(On-site / online)

16:30H Chebfun Session
(On-site)

WHERE?
On-site
Room 04.363 Seminarraum Mathematik.
Department of Mathematik.
Friedrich-Alexander-Universität Erlangen-Nürnberg
Cauerstrasse 11, 91058 Erlangen

Online
Zoom meeting link: **shorturl.at/jlHV5**
Meeting ID: **694 3141 3515** | PIN: **730757**