

EMS Series in Industrial and Applied Mathematics

Edited by Alfredo Bermúdez de Castro (Universidade de Santiago de Compostela), Lorenz T. Biegler (Carnegie Mellon University), Annalisa Buffa (École Polytechnique Fédérale de Lausanne), Matthias Heinkenschloss (Rice University), Alexander Martin (Technische Universität Nürnberg), Volker Mehrmann (Technische Universität Berlin), Stephen B. G. O'Brien (University of Limerick)

The EMS Series in Industrial and Applied Mathematics publishes high quality advanced texts and monographs in all areas of industrial and applied mathematics. Books include those of a general nature as well as those dealing with the mathematics of specific applications areas and real-world situations. While it is intended to disseminate scholarship of the highest standard, authors are encouraged to make their work as accessible as possible.

Previously published in this series:

- 1 P. Deufhard, M. Grötschel, D. Hömberg, U. Horst, J. Kramer, V. Mehrmann, K. Polthier, F. Schmidt, C. Schütte, M. Skutella, J. Sprekels (Eds.), *MATHEON – Mathematics for Key Technologies*
- 2 A. Morsi, A. Pirsing (Eds.), *Decision Support Systems for Water Supply Systems*
- 3 M. Garrione, F. Gazzola (Eds.), *Interactions between Elasticity and Fluid Mechanics*
- 4 M. Farber, J. González (Eds.), *Topology and AI*



Nicola Guglielmi

Christian Lubich

Matrix Nearness Problems and Eigenvalue Optimization



EM
S ■
PRESS

Authors:

Nicola Guglielmi
Division of Mathematics
Gran Sasso Science Institute
Viale Francesco Crispi 7
67100 L'Aquila, Italy
Email: nicola.guglielmi@gssi.it

Christian Lubich
Mathematisches Institut
Eberhard Karls Universität Tübingen
Auf der Morgenstelle 10
72076 Tübingen, Germany
Email: lubich@na.uni-tuebingen.de

2020 Mathematics Subject Classification: Primary 65-02; Secondary 65F15, 65F35, 15A18, 15A22, 93D09, 93B36, 05C50

Keywords: matrix nearness problems, eigenvalue optimization, pseudospectra, structured perturbations, stability radii, matrix stabilization, singular values, matrix differential equations, low-rank methods, robust control, spectral graph algorithms

ISBN 978-3-98547-116-4, eISBN 978-3-98547-616-9, DOI 10.4171/ESIAM/5

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available on the Internet at <http://dnb.dnb.de>.

Published by EMS Press, an imprint of the

European Mathematical Society – EMS – Publishing House GmbH
Institut für Mathematik
Technische Universität Berlin
Straße des 17. Juni 136
10623 Berlin, Germany

Email: info@ems.press

<https://ems.press>

© 2026 European Mathematical Society

Typesetting: Ashry Abdalla, Diksmuide, Belgium

Printed in Germany

♻️ Printed on acid free paper