



EMS Tracts in Mathematics 34

EMS Tracts in Mathematics

Edited by Michael Farber (Queen Mary University of London), Michael Röckner (Universität Bielefeld and Purdue University), Alexander Varchenko (The University of North Carolina at Chapel Hill)

This series includes advanced texts and monographs covering all fields in pure and applied mathematics. The *Tracts* will give a reliable introduction and reference to special fields of current research. The books in the series will in most cases be authored monographs, although edited volumes may be published if appropriate. They are addressed to graduate students seeking access to research topics as well as to the experts in the field working at the frontier of research.

Previously published in this series:

- 1 P. Daskalopoulos, C. E. Kenig, *Degenerate Diffusions*
- 2 K. H. Hofmann, S. A. Morris, *The Lie Theory of Connected Pro-Lie Groups*
- 3 R. Meyer, *Local and Analytic Cyclic Homology*
- 4 G. Harutyunyan, B.-W. Schulze, *Elliptic Mixed, Transmission and Singular Crack Problems*
- 5 G. Feldman, *Functional Equations and Characterization Problems on Locally Compact Abelian Groups*
- 6 E. Novak, H. Woźniakowski, *Tractability of Multivariate Problems. Vol. I*
- 7 H. Triebel, *Function Spaces and Wavelets on Domains*
- 8 S. Albeverio, Y. Kondratiev, Y. Kozitsky, M. Röckner, *The Statistical Mechanics of Quantum Lattice Systems*
- 9 G. Böckle, R. Pink, *Cohomological Theory of Crystals over Function Fields*
- 10 V. Turaev, *Homotopy Quantum Field Theory*
- 11 H. Triebel, *Bases in Function Spaces, Sampling, Discrepancy, Numerical Integration*
- 12 E. Novak, H. Woźniakowski, *Tractability of Multivariate Problems. Vol. II*
- 13 L. Bessièeres, G. Besson, M. Boileau, S. Maillot, J. Porti, *Geometrisation of 3-Manifolds*
- 14 S. Börm, *Efficient Numerical Methods for Non-local Operators*
- 15 R. Brown, P. J. Higgins, R. Sivera, *Nonabelian Algebraic Topology*
- 16 M. Janicki, P. Pflug, *Separately Analytical Functions*
- 17 A. Björn, J. Björn, *Nonlinear Potential Theory on Metric Spaces*
- 18 E. Novak, H. Woźniakowski, *Tractability of Multivariate Problems. Vol. III*
- 19 B. Bojarski, V. Gutlyanskii, O. Martio, V. Ryazanov, *Infinitesimal Geometry of Quasiconformal and Bi-Lipschitz Mappings in the Plane*
- 20 H. Triebel, *Local Function Spaces, Heat and Navier–Stokes Equations*
- 21 K. Nipp, D. Stoffer, *Invariant Manifolds in Discrete and Continuous Dynamical Systems*
- 22 P. Dehornoy, F. Digne, E. Godelle, D. Kramer, J. Michel, *Foundations of Garside Theory*
- 23 A. C. Ponce, *Elliptic PDEs, Measures and Capacities*
- 24 H. Triebel, *Hybrid Function Spaces, Heat and Navier–Stokes Equations*
- 25 Y. Cornulier, P. de la Harpe, *Metric Geometry of Locally Compact Groups*
- 26 V. Guedj, A. Zeriahi, *Degenerate Complex Monge–Ampère Equations*
- 27 N. Raymond, *Bound States of the Magnetic Schrödinger Operator*
- 28 A. Henrot, M. Pierre, *Shape Variation and Optimization*
- 29 A. Kosyak, *Regular, Quasi-regular and Induced Representations of Infinite-dimensional Groups*
- 30 V. G. Maz'ya, *Boundary Behavior of Solutions to Elliptic Equations in General Domains*
- 31 I. V. Gel'man, V. G. Maz'ya, *Estimates for Differential Operators in Half-space*
- 32 S. Kondō, *K3 Surfaces*
- 33 S. I. Repin, S. A. Sauter, *Accuracy of Mathematical Models*



Evgen Ya. Khruslov

Homogenized Models of Suspension Dynamics



EM
S ■
PRESS

Author:

Evgen Ya. Khruslov
B. Verkin Institute for Low Temperature Physics and Engineering
National Academy of Sciences of Ukraine
47 Nauky Avenue
61103 Kharkiv, Ukraine
Email: khruslov@ilt.kharkov.ua

2020 Mathematics Subject Classification: 35Q35, 76M50, 76T20, 35B27

Keywords: suspension, asymptotic behavior of solutions, mesoscopic characteristics of micro-structure, homogenized equations, frozen particles mode, filtering particles mode, cell problem

ISBN 978-3-98547-009-9

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

<https://ems.press>

© 2021 European Mathematical Society

Typeset using the author's LaTeX sources: Alison Durham, Manchester, UK
Printing and binding: Beltz Bad Langensalza GmbH, Bad Langensalza, Germany

© Printed on acid free paper

9 8 7 6 5 4 3 2 1