



Zurich Lectures in Advanced Mathematics

Edited by Habib Ammari, Alexander Gorodnik (Managing Editor), Urs Lang (Managing Editor), and Michael Struwe

Mathematics in Zurich has a long and distinguished tradition, in which the writing of lecture notes volumes and research monographs plays a prominent part. The *Zurich Lectures in Advanced Mathematics* series aims to make some of these publications better known to a wider audience. The series has three main constituents: lecture notes on advanced topics given by internationally renowned experts, in particular lecture notes of “Nachdiplomvorlesungen”, organized jointly by the Department of Mathematics and the Institute for Research in Mathematics (FIM) at ETH, graduate text books designed for the joint graduate program in Mathematics of the ETH and the University of Zürich, as well as contributions from researchers in residence. Moderately priced, concise and lively in style, the volumes of this series will appeal to researchers and students alike, who seek an informed introduction to important areas of current research.

Previously published in this series:

- D. Christodoulou, *Mathematical Problems of General Relativity I*
- C. De Lellis, *Rectifiable Sets, Densities and Tangent Measures*
- P. Seidel, *Fukaya Categories and Picard–Lefschetz Theory*
- A. H. W. Schmitt, *Geometric Invariant Theory and Decorated Principal Bundles*
- M. Farber, *Invitation to Topological Robotics*
- A. Barvinok, *Integer Points in Polyhedra*
- C. Lubich, *From Quantum to Classical Molecular Dynamics: Reduced Models and Numerical Analysis*
- S. Onn, *Nonlinear Discrete Optimization. An Algorithmic Theory*
- K. Nakanishi, W. Schlag, *Invariant Manifolds and Dispersive Hamiltonian Evolution Equations*
- E. Faou, *Geometric Numerical Integration and Schrödinger Equations*
- A.-S. Sznitman, *Topics in Occupation Times and Gaussian Free Fields*
- F. Labourie, *Lectures on Representations of Surface Groups*
- I. Gallagher, L. Saint-Raymond, B. Texier, *From Newton to Boltzmann: Hard Spheres and Short-range Potentials*
- R. J. Marsh, *Lecture Notes on Cluster Algebras*
- E. Hebey, *Compactness and Stability for Nonlinear Elliptic Equations*
- S. Serfaty, *Coulomb Gases and Ginzburg–Landau Vortices*
- A. Figalli, *The Monge–Ampère Equation and Its Applications*
- W. Schachermayer, *Asymptotic Theory of Transaction Costs*
- A. Thomas, *Geometric and Topological Aspects of Coxeter Groups and Buildings*
- T. Fisher, B. Hasseblatt, *Hyperbolic Flows*
- S. Baader, *Geometry and Topology of Surfaces*
- N. Anantharaman, *Quantum Ergodicity and Delocalization of Schrödinger Eigenfunctions*
- X. Fernández-Real, X. Ros-Oton, *Regularity Theory for Elliptic PDE*
- A. Polishchuk, *A_∞ -Structures and Moduli Spaces*
- R. Nickl, *Bayesian Non-linear Statistical Inverse Problems*
- A. Malchiodi, *Prescribing Scalar Curvature in Conformal Geometry*
- T. Dominguez, J.-C. Mourrat, *Statistical Mechanics of Mean-Field Disordered Systems. A Hamilton–Jacobi Approach*
- K. J. Böröczky, A. Figalli, J. P. G. Ramos, *Isoperimetric Inequalities, Brunn–Minkowski Theory and Minkowski-Type Monge–Ampère Equations on the Sphere*

Published with the support of the Huber-Kudlich-Stiftung, Zürich



Karin Baur

Cluster Algebras and Cluster Categories via Surfaces



Author

Karin Baur
Fakultät für Mathematik
Ruhr-Universität Bochum
Universitätsstr. 150
44780 Bochum, Germany;
School of Mathematics
University of Leeds
Woodhouse Lane
Leeds LS2 9JT, UK

Email: karin.baur@ruhr-uni-bochum.de

2020 Mathematics Subject Classification: Primary 13-01; Secondary 05E10, 13F60, 14M15, 16E35, 16G20, 16S38, 17B22, 57Q15

Keywords: cluster algebras, cluster categories, Dynkin diagram, finite mutation type, Grassmannian, quiver representation theory, mutation, frieze patterns, surface combinatorics, triangulations of surfaces, snake graphs

ISBN 978-3-98547-117-1, eISBN 978-3-98547-617-6, DOI 10.4171/ZLAM/34

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 EMS Press

Typesetting: Nikos Tymis, Thessaloniki, Greece

Printed in Germany

⊗ Printed on acid free paper