Preface

Alexander Zimmermann¹

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The autumn volume contains two survey articles and one book review.

The survey article by Cornelius Greither deals with a problem in algebraic number theory. For a field of algebraic numbers one may form the class group. For this one first considers the algebraic integers, then takes the set of ideals of this ring of algebraic integers and finally considers the equivalence relation generated by ideals taken up to multiplication by a non zero element of the ring. This forms an abelian group under multiplication of ideals, the class group. The class group is one of the fundamental objects of interest in algebraic number theory. If the field is Galois over the rational numbers, then the Galois group acts on this class group and one might like to understand the module structure of this class group. This highly sophisticated question is linked to many important problems in number theory. The article describes the approaches to understand the structure by means of nice intermediate invariants, the Fitting ideals.

The survey article by Bastian Harrach studies new approaches to inverse problems in elliptic partial differential equations where the unknown coefficient is piecewise constant. This text is written as an introductory tutorial for implementing such problems with Finite Element Methods providing source codes for algorithms in COMSOL and Matlab. The article discusses in some detail the example of electric impedance tomography.

Thorsten Wedhorn presents the new book “Foundation of Rigid Geometry I” by Kazuhiro Fujiwara.

I hope you enjoy this new volume of the Jahresbericht.

Alexander Zimmermann

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✉ A. Zimmermann
alexander.zimmermann@u-picardie.fr

¹ Département de mathématiques et LAMFA (UMR 7352 du CNRS), Université de Picardie, Amiens, France