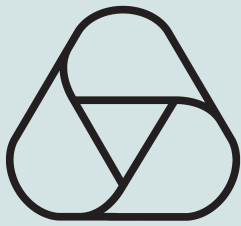
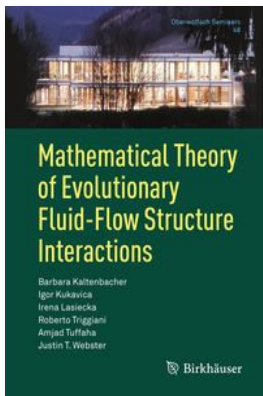


# Oberwolfach Seminars



The workshops organized by the *Mathematisches Forschungsinstitut Oberwolfach* are intended to introduce students and young mathematicians to current fields of research. By means of these well-organized seminars, also scientists from other fields will be introduced to new mathematical ideas. The publication of these workshops in the series *Oberwolfach Seminars* (formerly *DMV Seminar*) makes the material available to an even larger audience.



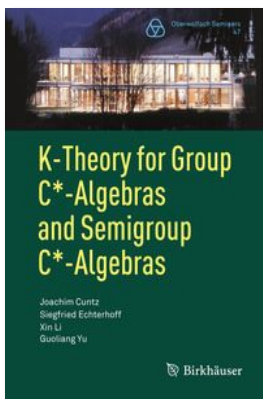
## Mathematical Theory of Evolutionary Fluid-Flow Structure Interactions

**Kaltenbacher, B./ Kukavica, I./ Lasiecka, I./ Triggiani, R./ Tuffaha, A./ Webster, J.T.**

2018, 322 p., softcover  
ISBN 978-3-319-92782-4  
Oberwolfach Seminars, Vol. 48

This book is devoted to the study of coupled partial differential equation models, which describe complex dynamical systems occurring in modern scientific applications such as fluid/flow-structure interactions. The first chapter provides a general description of a fluid-structure interaction, which is formulated within a realistic framework, where the structure subject to a frictional damping moves within the fluid. The second chapter then offers a multifaceted description, with often surprising results, of the case of the static interface; a case that is argued in the literature to be a

good model for small, rapid oscillations of the structure. The third chapter describes flow-structure interaction where the compressible Navier-Stokes equations are replaced by the linearized Euler equation, while the solid is taken as a nonlinear plate, which oscillates in the surrounding gas flow. The final chapter focuses on a the equations of nonlinear acoustics coupled with linear acoustics or elasticity, as they arise in the context of high intensity ultrasound applications, and ideas and should provide graduate students with a stepping stone to this exciting direction of research.



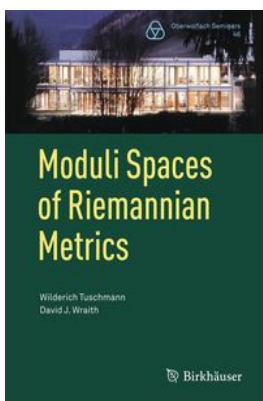
## K-Theory for Group C\*-Algebras and Semigroup C\*-Algebras

**Cuntz, J./ Echterhoff, S./ Li, X./ Yu, G.**

2017, 332 p., softcover  
ISBN 978-3-319-59914-4  
Oberwolfach Seminars, Vol. 47

This book gives an account of the necessary background for group algebras and crossed products for actions of a group or a semigroup on a space and reports on some very recently developed techniques with applications to particular examples. Much of the material is available here for the first time in book form. The topics discussed are among the most classical and intensely studied C\*-algebras. They are important for applications in fields as diverse as the theory of unitary group representations, index theory, the topology of manifolds or ergodic theory of group actions.

Part of the most basic structural information for such a C\*-algebra is contained in its K-theory. The determination of the K-groups of C\*-algebras constructed from group or semigroup actions is a particularly challenging problem. Paul Baum and Alain Connes proposed a formula for the K-theory of the reduced crossed product for a group action that would permit, in principle, its computation. By work of many hands, the formula has by now been verified for very large classes of groups and this work has led to the development of a host of new techniques. An important ingredient is Kasparov's bivariant K-theory.



## Moduli Spaces of Riemannian Metrics

**Tuschmann, Wilderich / Wraith, David J.**

2015, 133 p., softcover  
ISBN 978-3-0348-0947-4  
Oberwolfach Seminars, Vol. 46

This book studies certain spaces of Riemannian metrics on both compact and non-compact manifolds. These spaces are defined by various sign-based curvature conditions, with special attention paid to positive scalar curvature and non-negative sectional curvature, though we also consider positive Ricci and non-positive sectional curvature. If we form the quotient of such a space of metrics under the action of the diffeomorphism group (or possibly a subgroup) we obtain a moduli space. Understanding the topology of both the original space of metrics and the corresponding moduli space form the central

theme of this book. For example, what can be said about the connectedness or the various homotopy groups of such spaces? We explore the major results in the area, but provide sufficient background so that a non-expert with a grounding in Riemannian geometry can access this growing area of research.



# Submission of Manuscripts

Preferably, manuscripts should be typeset in LaTeX (LaTeX2e). If the layout instructions below are taken into account, other TeX/LaTeX dialects like AMS-TeX can be accepted.

## General remarks:

We would appreciate it, if the text does not contain `\overfull` and/or `\underfull` boxes, if equations do not exceed the indicated width, if hyphenations have been checked, and if the hierarchical structure of the book is clear. There is no need for marking each level with different fonts or special font sizes. Please avoid caps and underlines and do not use `\hoffset` or `\voffset`, nor true sizes such as for example `truecm`.

## Class File:

To simplify the transformation process between your documents and the final layout, we provide the LaTeX class file

```
birkmono.cls
```

ready for use with the newer LaTeX versions (LaTeX2e). It can be downloaded from our website under

<http://www.springer.com/birkhauser/mathematics/download?SGWID=0-40465-0-0-0>

or requested from the editorial office. Then, the first line in your document should be

```
\documentclass{birkmono}.
```

The class file mainly sets the fonts, margins and spacing. It is based on the standard LaTeX book class and provides also the AMS-LaTeX fonts and commands. Hence, there is no need to learn new commands, just use the usual LaTeX or AMS-LaTeX commands inside your document.

## General layout:

If you don't use the class file, your main document should begin as follows:

```
\documentclass{book}  
or  
\documentclass{amsbook} for AMS-LaTeX
```

```
\setlength{\textwidth}{125mm}  
\setlength{\textheight}{185mm}  
\setlength{\parindent}{8mm}  
\frenchspacing  
\setlength{\oddsidemargin}{0pt}  
\setlength{\evensidemargin}{0pt}
```

equations centered, equation numbers on the right side (default in book-style).

## Plain TeX

```
10pt (default)-fonts  
\hsiz=125mm  
\vsiz=185mm  
\parindent=8mm  
\frenchspacing  
equations centered, equation numbers on the right side (default in plain TeX).
```

## AMSTeX

```
\documentstyle{amsptt}  
10pt (default)-fonts  
\pagewidth{125mm}  
\pageheight{185mm}  
\parindent=8mm  
\frenchspacing  
equations centered, equation numbers (tags) on the right side (default in AMSTeX).
```

## Page numbering, running heads, footnotes:

The main text should start with page number 1 (arabic); all the preceding material (table of contents, preface, dedication etc.) should bear roman numbers starting from v (roman 5). The first four pages, including the title page, will be added by us. Please let each chapter start on an odd numbered page; on such pages, however, page numbers and running heads should be omitted. Otherwise the headers of pages on the left-hand side (even page numbers) should bear the chapter title, those on the right-hand side (odd page numbers) should bear the paragraph title. The running heads ought to be centered. For headlines, as well as for footnotes, please choose the same font as for the main text, but in a smaller size.

## Indentation:

Though indentation to indicate a new paragraph is welcome, please do not use indentation when the new paragraph is already marked by an extra vertical space, as for example in the case of the first paragraph following a heading. Unless the style-file you are using is taking care of this already please insert `\noindent` in such a situation. Likewise, please make sure not to indent the first line of theorems, lemmas, proofs etc., but rather to separate them from the preceding text by a little extra vertical space. Beware of inserting an empty line before or after a display in your source file. This has an effect on indentation as well as on TeX's choice of pagebreaks.

## Figures, tables and so on:

Please send figures as

- (a) EPS-file (encapsulated postscript) with a resolution of at least 300 dpi, or
- (b) pdf file at 300dpi, better 600dpi, with embedded fonts in case letters or symbols are used.

It is sometimes difficult to place insertions at an exact location in the final form of the book. Therefore, all figures and tables should be numbered and you should refer to these numbers within the text. Please avoid formulations like "the following figure...".

## Typoscript.

Please send your work as

- (1) files including all .tex, .dvi, .log, .aux files as well as your own personal macros and input files which are not commonly known (e.g., article.sty is commonly known).
- (2) A PDF file for reference.

We need the .log files since they contain relevant information on the used software (e.g. which version of LaTeX has been used).

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