

# Preface

In this work dispersive and Strichartz estimates for solutions to general strictly hyperbolic partial differential equations with constant coefficients are considered. The global time decay estimates of  $L^p - L^q$  norms of propagators are analysed in detail and it is described how the time decay rates depend on the geometry of the problem. For these purposes, the frequency space is separated in several zones each giving a certain decay rate. Geometric conditions on characteristics responsible for the particular decay are presented. Thus, a comprehensive analysis is carried out for strictly hyperbolic equations of high orders with lower order terms of a general form. Most of the analysis also applies to equations with pseudo-differential in the space variables. We also show how the obtained estimates apply to solutions to hyperbolic systems with constant coefficients. The applications of the obtained results include the time decay estimates for the solutions to the Fokker–Planck equation and for the solutions of semilinear hyperbolic equations.

The authors are grateful to Jens Wirth for remarks about the preliminary version of the manuscript, to Tokio Matsuyama and Mitsuru Sugimoto for discussions, and to an anonymous referee for useful comments. The first author was supported in part by EPSRC grants EP/E062873/01 and EP/G007233/1.

Department of Mathematics  
Imperial College London  
180 Queen's Gate  
London SW7 2AZ  
United Kingdom

*E-mail address:* m.ruzhansky@imperial.ac.uk