Acknowledgements

This work owes an intellectual debt of gratitude to the monograph *Integral Geometry of Tensor Fields* by Vladimir Sharafutdinov (Sharafutdinov, 1994). In the past two decades Sharafutdinov's book has had a major influence in the way the area of geometric inverse problems has developed and we would like to acknowledge that here. The present text gives an up-to-date treatment of several of the topics that were addressed in Sharafutdinov's monograph.

The first author has benefited from numerous discussions with Will Merry while preparing the joint lecture notes Merry and Paternain (2011). These notes arose from a Part III course of the Mathematical Tripos at the University of Cambridge given by the first author and also influenced the way some topics are presented here.

We are very grateful for comments and corrections from several people when preparing the text. In particular, we wish to thank Jan Bohr, Kevin Chien, Haim Grebnev, Sergei Ivanov, Kelvin Lam, Marco Mazzucchelli, François Monard, Suman Kumar Sahoo, Yiran Wang, and Hanming Zhou. François Monard provided us with some of the figures, in particular the simulations in Chapter 9.

Parts of this text have been used as a basis for courses and minicourses at the Technical University of Denmark, Fudan University, Max-Planck-Institute Leipzig, the University of Helsinki, the University of Jyväskylä, and the University of Washington. We would like to thank all participants of these courses for their comments and suggestions.

The third author was partially supported during the writing of this book by NSF, a Walker Family Endowed Professorship at UW, and a Si-Yuan Professorship at IAS, HKUST. He would also like to thank the Department of Mathematics of UW for the opportunity to teach a graduate class based on a draft of the book.