

PREFACE

Professor Björn Engquist is one of the most distinguished applied mathematicians of our time. He has made fundamental contributions on numerical methods for partial differential equations, such as, absorbing boundary condition, ENO scheme, and numerical modelings of multiscale hyperbolic problems, etc. (for details, see the introduction of Professor Weinan E next page). He has strongly influenced the development of this field also by producing so many outstanding students and post-doctors who have become the leaders of this field, many of whom are Chinese. Thus, the editors of *Methods and Applications of Analysis* are happy to dedicate this special issue to Professor Engquist on the occasion of his sixtieth birthday.

We are grateful to all the authors who have contributed their excellent research articles to this issue in recognition of the great contributions that Professor Engquist made to mathematics. We also would like to thank Professor Weinan E for his personal essay on Björn.

We wish Björn a happy birthday and many more productive years ahead.

Editors of MAA

It is hard to believe, nevertheless it is a fact that Björn has passed sixty now. It seems like yesterday when I first met the handsome young man in the hallway of the mathematics department of UCLA. He had just passed his 40th birthday then, and he was already a leading applied mathematician: His work on absorbing boundary condition has won worldwide recognition; ENO scheme was in the making; and he had just opened up a new area – the numerical modeling of multiscale hyperbolic problems.

Among the many contributions that Björn has made, I would like to mention in particular his work on multiscale modeling, which has become a very popular field now. Björn is a true pioneer in that field. Back in the 1980's he had already studied quite systematically whether the macroscopic dynamics of hyperbolic systems can be captured without resolving all the microscopic details, and what kind of numerical methods would be able to do that. His course on multiscale modeling was perhaps the only course at the time that systematically discussed numerical issues for multiscale problems for different types of partial differential equations. It is not a surprise that some of his former students have also become active players in the field now. Multiscale modeling has continued to be one of Björn's main interests, and he is undoubtedly one of the most prominent leaders of that field.

This volume is a special tribute to Björn's scientific career so far. It gives an opportunity for some of Björn's students and friends to express their respect and gratitude through their own work. It is not a coincidence that the contributors are either Swedes or Chinese – this is also reflected in the make-up of Björn's students.

I am very grateful to Professor Zhouping Xin for putting together this volume.

Weinan E