Preface

Mathematical analysis on nonlinear wave and dispersive equations has been extensively developed in the last few decades. In particular, significant progress has been made in the mathematical study on the large time behavior and asymptotic expansion of global solutions to the Cauchy problem. The international conference "Asymptotic Analysis for Nonlinear Dispersive and Wave Equations" was held from 6th to 9th of September 2014 at Osaka University in Toyonaka, Japan, inviting world-class mathematicians to give talks on the latest developments in this field. The topics were selected within mathematical research on nonlinear systems of dispersive and wave equations with emphasis on asymptotic behavior and regularity of solutions as well as on closely related equations from fluid mechanics. The conference had more than 100 participants.

This conference was planned also to provide an opportunity to honor Professor Nakao Hayashi, who has made significant contributions to asymptotic analysis for nonlinear dispersive and wave equations, on the occasion of his sixtieth birthday.

With Professor Pavel I. Naumkin, Professor Nakao Hayashi initiated the theory of asymptotic expansion of global solutions to the Cauchy problem for nonlinear dispersive and hyperbolic equations with long-range interactions on the basis of logarithmic phase modification by taking into account the long-range effect of nonlinearity. The theory developed by themselves with their collabolators is now extended into a various type of nonlinear dispersive and hyperbolic equations and his contributions, including this theory, has been highly estimated. He was awarded Analysis Prize from Mathematical Society of Japan. This volume of Advanced Study of Pure Mathematics, published by Mathematical Society of Japan, is intended as the proceedings of the conference, consisting of original papers written by experts who participated in the conference.

We hope that this volume will be of particular interest to people working in this field as well as non-specialists, who are willing to get a clear picture of the latest developments and powerful methods in the asympotic analysis for nonlinear dispersive and wave equations.

We dedicate this volume to Professor Nakao Hayashi with admiration.