Preface

In 2007, Professor Akihiro Tsuchiya of Nagoya University reached the retirement age of sixty-three. He has played a significant role in mathematical physics over the decades, most particularly in the foundation of conformal field theory, which was the first nontrivial example of a mathematically rigorous quantum field theory.

Upon the occasion of his retirement, an international conference entitled

"Exploration of New Structures and Natural Constructions in Mathematical Physics" (March 5–8, 2007)

was held at Nagoya University, to which distinguished researchers in the field were invited to overview the current developments in conformal field theories and related topics such as solvable statistical models, representation theory of affine algebras, monodromy preserving deformations, and string theories.

This volume contains the contributed papers of the speakers, where, in addition to their own primary achievements, they introduce the problems in their fields and the principles of the theories.

We hope that readers interested in topics such as integrable systems, similarities between knot theory and number theory, topological fields, etc, will find exciting and stimulating insights and questions in these articles.

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Organizers / Editors

Koji Hasegawa
Takahiro Hayashi
Shinobu Hosono
Yasuhiko Yamada