

PREFACE

This volume contains contributions that are based on papers presented at “*The First International Workshop on Entangled Coherent States and Its Application to Quantum Information Science - Towards Macroscopic Quantum Communications -*,” which was held from November 26-28, 2012 on the campus of Tamagawa University, Tokyo, Japan. This workshop was hosted by Tamagawa University and was attended by more than thirty participants from thirteen countries: Australia, Japan, Korea, Taiwan, China, Singapore, India, Qatar, Bahrain, Italy, UK, Canada, and USA (in east-to-west order). The aim of this workshop was to provide opportunities for sharing and exchanging research results and to build lasting friendship, under the keywords of “entangled coherent states” and “macroscopic quantum communications”.

The term “entangled coherent state” was coined by Sanders. In the last decade many fruitful research results on the physics of entangled coherent states were reported through many journals. Further, in step with this movement, entangled coherent states began to be recognized as a potential resource for performing quantum information processing. Thus, the study of entangled coherent states has been growing increasingly important not only from the viewpoint of physics but also from that of applications for future information and communication technology. Motivated by this fact, we conceived the idea to conduct this workshop in one place with professionals of many research communities. We maintain that it is time to discuss the spectrum of issues related to entangled coherent states, including the physical properties to its many applications. Moreover, the subtitle, “Towards Macroscopic Quantum Communications”, was added to emphasize the potential of entangled coherent states and to reflect the future course of the development of quantum information science that we believe.

We are grateful to all those who helped make this workshop possible. First and foremost, we wish to thank all the participants of the workshop who made this event a success through their active contributions. We gratefully acknowledge generous sponsorship from Tamagawa University and personally thank Professor Yoshiaki Obara, the president of Tamagawa University, for his personal interest in and support of this workshop. This workshop would not have run as smoothly as it did without the hard work of the staff of Tamagawa University. In particular, Mrs. Noriko Watanabe was superb as the corresponding secretary between the participants and Tamagawa.

We hope that the reader of these proceedings find a new perspective of this exciting research field. We also hope that this workshop will become a platform for discussion of quantum information science based on entangled coherent states in the years to come.

Tsuyoshi S. Usuda
Kentaro Kato