PREFACE

This issue is a small collection of papers presented at the XI International Conference on Squeezed States and Uncertainty Relations (XI ICSSUR) and the IV Feynman Festival (IV FF). It was the first time that the ICSSUR and the FF were held at the same place, at Olomouc, the Czech Republic from June 22 to June 26, 2009. This decision made by the founder of both conference series, Professor Young S. Kim (University of Maryland, USA), promoted mutual fruitful interaction between two communities of researchers working in the field of quantum optics and squeezed and nonclassical states, on the one hand, and foundations of quantum mechanics and quantum information, on the other. The common program of both conferences included a broad range of topics from modern quantum physics: coherent states and squeezed states, phase-space methods, continuous variables and quantum information processing with continuous variables, various quantum detection schemes, quantum measurement, quantum metrology, generation of discrete quantum states, entangled photon pairs, atom and molecular optics, spins, cavity QED, decoherence and entanglement, quantum computing, quantum-information processing, as well as foundations of quantum theory.

In this issue, new schemes for the generation of squeezed states were traditionally discussed (B. Belomo, G. Compagno, H. Nakazato, and K. Yuasa). The entanglement in continuous variable quantum systems (A. Isar) has become a standard topic of these conferences. Studies of entanglement have been extended to more complex systems recently, four-partite states (O. V. Belyaeva and A. S. Chirkin) serving as an example. A great deal of attention was also paid to systems characterized by discrete variables, namely to fields composed of entangled photon pairs. The measurement of photon-number statistics (A. Andreoni, A. Allevi, and M. Bondani) as well as spatial correlations (M. Hamar, J. Peřina Jr., V. Michálek, and O. Haderka) and new sources of photon pairs (J. Peřina, Jr., M. Centini, C. Sibilila, and M. Bertolotti) were addressed. Nonclassical states and interactions were also investigated in SQUID rings (M. J. Everitt), atomic states (I. Sainz, A. B. Klimov, and L. R. Oppliger), quantum dots (H. Matsueda), and polarization states of optical fields (A. Černoč, J. Soubusta, M. Dušek, and J. Fiurášek). Basic elements of quantum mechanics were deeply investigated (A. Yu. Khrennikov; T. F. Kamalov). The qualitative as well as quantitative resolution of quantum properties of physical systems has led to a better understanding of quantum mechanics (G. G. Amosov and V. I. Man'ko; S. S. Mizrahi, A. V. Dodonov, and V. V. Dodonov; S. N. Filippov and V. I. Man'ko). Inequalities valid for physical quantities was shown to be very important indicators of quantum behavior (M. A. Man'ko). It was emphasized that wave-particle duality (V. Peřinová and A. Lukš) belongs, together with nonlocality (J. Dunningham), to one of the most striking features of quantum mechanics.

All these topics were intensively discussed during the conferences and provided the participants with the newest information on developments in the fields of quantum optics, quantum information, and quantum theory in general.

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Chairman of the XI ICSSUR
and IV FF Organizing Committee