

CEWQO 2006 — Editorial Note

CEWQO as a Central European Initiative

The series of *Workshops on Quantum Optics* was started in 1993 by an initiative of Vladimir Bužek from Bratislava and József Janszky from Budapest. Previous workshops of this series were held in *Bratislava* (Slovakia, 1993), *Budapest* (Hungary, 1994), *Budmerice* (Slovakia, 1995 and 1996), *Prague* (Czech Republic, 1997), *Olomouc* (Czech Republic 1999), *Balatonfüred* (Hungary, 2000), *Prague* (Czech Republic, 2001), *Szeged* (Hungary, 2002), *Rostock* (Germany, 2003), *Trieste* (Italy, 2004), *Ankara* (Turkey, 2005). The most recent workshop has taken place in *Vienna* at the Scientific Centre of the Polish Academy of Sciences, which turned out to be a very suitable place for such an event. The workshops have grown into a significant European conference beyond the Central European region.

Status of Quantum Optics

Numerous Nobel Prizes in recent years were devoted to research in Quantum Optics, thus demonstrating the relevance of this field for basic and applied research. During the last decades the laureates are: in 1997 S. Chu, C. Cohen-Tannoudji, W.D. Phillips; in 2001 E.A. Cornell, W. Ketterle, C.E. Wieman, and in 2005 R.J. Glauber, J.L. Hall, T.W. Hänsch.

The field covers a broad scope of topics, which were also treated at the CEWQO-2006 Workshop:

- Modern trends in quantum optics
- Quantum optics of massive particles
- Quantum optics with condensed matter
- Quantum information and quantum computing
- Bose–Einstein condensates
- Decoherence effects
- Fundamentals of quantum mechanics

The Vienna CEWQO

The number of participants at the Vienna CEWQO-2006 Workshop increased to 90, and they presented 64 invited lectures and 21 posters. To facilitate participation from the Central and Eastern European countries, financial support was provided from various sources. The main sponsors of the Workshop, which are gratefully acknowledged, were:

- Central European Initiative
- Vienna University of Technology
- Austrian Science Fund
- City of Vienna – Kulturamt
- Ministry of Education, Science and Culture

The Workshop provided an ideal platform for the exchange of information and for the fostering of new partnerships, especially between research groups of the Central and Eastern European region with groups from other regions of the world. The Workshop was scheduled as an official event of the Austrian presidency of the European Union.

The progress in experimental techniques as presented during the Workshop is very impressive. Atoms and molecules can be manipulated and addressed individually, thus providing the basis for quantum computing. The interference of Bose–Einstein condensates represents a further step towards the understanding of large quantum objects. How a classical world emerges out of quantum nature is a strongly debated subject, where decoherence, quantum retrieval and multi-entanglement play an important role. The fundamental difference between a classical and a quantum world has been tackled in many contributions indicating that there is no well-defined quantum-classical limit and there are no hidden variables within the framework of quantum theory.

This issue of *Acta Physica Hungarica B* represents the *first part* of the proceedings of the *13th CEWQO* meeting held in Vienna, May 23–27, 2006. The topics are arranged roughly according to the main topics of the Workshop. The *second part* will be published in the consecutive issue of the present journal.

The series of workshops will be continued in *Palermo*, June 1–5, 2007.

The Editors:

Ewald Balcar, Wien

Péter Domokos, Budapest

Helmut Rauch, Wien