

# From Informatics to Quantum Informatics

*(Invited Talk)*

Jozef Gruska\*

Faculty of Informatics, Masaryk University, Brno, Czech Republic.  
gruska@fi.muni.cz

## Abstract

During the recent years, exploration of the quantum information processing and communication science and technology got a significant momentum, and it has turned out quite clearly that paradigms, concepts, models, tools, methods and outcomes of informatics play by that a very important role. They not only help to solve problems quantum information processing and communication encounters, but they bring into these investigations a new quality to such an extent that one can now acknowledge an emergence of a quantum informatics as of an important area of fundamental science with contributions not only to quantum physics, but also to (classical) informatics.

The main goal of the talk will be to demonstrate the emergence of quantum informatics, as of a very fundamental, deep and broad science, its outcomes and especially its main new fascinating challenges, from informatics and physics point of view. Especially challenges in the search for new primitives, computation modes, new quality concerning efficiency and feasibility of computation and communication, new quality concerning quantum cryptographic protocols in a broad sense and also in a very new and promising area of quantum formal systems for programming, semantics, reasoning and verification.

The talk is targeted to informaticians that are pedestrians in quantum world, but would like to see what are new driving forces in informatics, where they drive us and how.

---

\* Support of the grants GAČR 201/04/1153 and MSM0021622419 is acknowledged.