Katedry biochémie a genetiky
Prírodovedeckej fakulty UK

Vás pozývajú na **42**. prednášku v rámci Kuželových seminárov:

Prof. Vladimír Bužek

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Secret life of qubits

ktorá sa uskutoční

23.4. 2004 (piatok)
o **14:00** v miestnosti CH1-224
knižnica Katedry biochémie PriF UK

http://www.fns.uniba.sk/~kbi/kuzela/

Secret life of qubits

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In my talk I will discuss a new paradigm of computing (information processing) based on the laws of quantum physics. Specifically, I will show how basic properties of quantum kinematics, i.e. quantum superposition principle and quantum entanglement, allow for a massive parallelism and efficiency of computation. I will discuss various consequences of application of the rules of quantum physics to quantum information processing (e.g. I will discuss quantum teleportation, quantum cryptographic key distribution and quantum super-dense coding). I will also describe various physical systems that are potential candidates for quantum processors. In addition I will briefly describe some of our original results on quantum cloning, universal NOT gate, programmable quantum processors, optimal state estimation from incomplete data, quantum secrete sharing, etc.

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[3] M.Hillery, M.Ziman, and V. Bužek (2002) Implementation of quantum maps by programmable quantum processors. *Phys. Rev.A* **66**, 042302–1-9
[4] F.DeMartini, V. Bužek, F.Sciarrino, and C.Sias (2002) Experimental realization of the quantum universal NOT gate. *Nature* **419**, 815–819.
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