Date: April 22nd, 2011, 14:40 ～ 16:10

Place: Osaka University, Toyonaka Campus, Graduate School of Engineering Science, Room B103

Lecturer: Prof. Aephraim Steinberg (University of Toronto)

Title: New Experimental Techniques in Quantum Measurement

Abstract: While quantum measurement remains the central philosophical conundrum of quantum mechanics, it has recently grown into a respectable (read: experimental!) discipline as well. New perspectives on measurement have grown out of the new technological possibilities, but also out of attempts to design systems for quantum information processing, which promise to be exponentially more powerful than any possible classical computer. I will present several examples of how our current ideas on quantum measurement go far beyond the usual textbook treatments, using examples from our entangled-photon and ultracold-atoms laboratories in Toronto. Topics will include weak measurement, "interaction-free" measurement, Hardy's Paradox, measurement-induced quantum logic, and techniques for controlling and characterizing the coherence of quantum systems.

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