

University of Washington Department of Physics

PHYSICS COLLOQUIUM

Dave Bacon (UW CSE)

“Who Will Build a Quantum Computer: the Physicists or the Computer Engineers?”

Monday, October 20, 2008

4:00 PM, Ronald Geballe Auditorium, Rm. A-102

Abstract: Building a quantum computer large enough to perform a task beyond the capability of today's classical computers (breaking a cryptographic code or simulating a complex quantum system) is a daunting task. On the fundamental side, this difficulty arises from the fact that quantum systems like to decohere, and that we cannot control a quantum system with perfect accuracy. On the technical side, the obstacles toward build a quantum computer arise from the severe engineering constraints imposed by manipulating individual quantum systems. The theoretical solution to the problems of decoherence and lack of control was worked out in the nineties and is known as the threshold theorem for fault-tolerant quantum computing. The great debate in quantum computing today is how the technical difficulties of building a quantum computer will be overcome. In this talk I will outline two very distinct camps on how this will be achieved: one centered very squarely on engineering and the other with roots in condensed matter physics. This is a battle for the soul of future quantum computers and will determine whether quantum computers are years, decades, or centuries away from being built.

Tuesday, October 21

General Exam

10:30 AM, Rm. B-305, PAB

Orin Harris, UW Physics

Condensed Matter Seminar

4:00 PM, Rm. C-421, PAT

Marco Rolandi, UW MSE

“The atomic force microscope as a patterning tool: lithography, self assembly, and devices”

Thursday, October 23

Astronomy Colloquium

4:00 PM, Rm. A-102, PAA

John Wisniewski, UW Astronomy

“High Contrast Imaging of Circumstellar Disks”

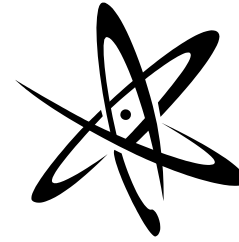
Friday, October 24

General Exam

3:00 PM, Rm C-520, PAT

Doug Faust, UW Physics

Seminars



Oct 20th-Oct 24th