

Wie wirklich sind Observable?

Do you really believe that the moon exists only when you look at it?

Einstein to A. Pais, Rev.Mod.Phys. **51**, 863 (1979)

Ob das, worüber man nichts wissen kann, doch existiert, darüber soll man sich doch wohl ebensowenig den Kopf zerbrechen, wie über die alte Frage, wieviele Engel auf einer Nadelspitze sitzen können.

Pauli, zitiert in Born-Einstein Briefwechsel

Möglicherweise ist es, nebenbei gesagt, für die Kopenhagener Interpretation der Quantenmechanik wichtig, dass ihre Sprache in einem gewissen Grad unbestimmt ist, und ich bezweifle, dass sie durch den Versuch, diese Unbestimmtheit zu vermeiden, klarer werden kann.

Heisenberg zu H.P. Strapp, Am.J.Phys. **40**, 1089 (1972)

Quantum Weirdness

Wem beim Nachdenken über die Quantentheorie nicht schwindlig wird, der hat sie nicht verstanden.

N. Bohr, zitiert in Heisenberg: Physik und Philosophie

I think I can safely say that nobody understands quantum mechanics.

R.P. Feynman, The Character of Physical Law

Quantum Information Science

Coordinators: David P. DiVincenzo, Debbie Leung, Daniel Loss, Wim van Dam

Scientific Advisors: Sankar Das Sarma, Peter Zoller

September 14, 2009 - December 11, 2009

Primary consideration deadline for applications has passed (February 15, 2009)

You may still send an application for consideration: [[Apply](#)]

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This program will bring together researchers in computer science, mathematics, information theory, and theoretical and experimental physics to tackle outstanding questions in quantum information science. Over the past decade researchers have obtained foundational results in crucial areas of this emerging field. Yet, many more obstacles have to be overcome, both theoretical and experimental, before we can realize the potential of processing information in a quantum mechanical manner. Meanwhile, many powerful techniques and ideas have been developed but have yet to be widely assimilated. The program will provide many opportunities to become familiar with these results and to foster collaboration to resolve some of the outstanding problems.

The topics in quantum information science on which we hope to focus include

- Algorithms
- Error Correction, Fault Tolerance
- Physics of Decoherence
- Cryptography
- Complexity Theory
- Shannon Theory
- Physical Implementations: Theory and Experiment

Experimentalists are encouraged to apply.

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Academic Year 2008-2009

Monday, October 26

12:15 p.m.  **KITP Blackboard Lunch** 

Debbie Leung, Univ. Waterloo & KITP

Information, Quantum Information, and Quantum Information Theory [[Podcast](#)][[Audio](#)][[WebCam](#)]

Auditorium

Monday, October 5

12:15 p.m.  **KITP Blackboard Lunch** 

Kieron Burke, UCI & KITP

The Breadth and Depth of Modern Electronic Structure Theory [[Podcast](#)][[Audio](#)][[WebCam](#)]

Auditorium

Monday, September 21

12:15 p.m.  **KITP Blackboard Lunch** 

Wim van Dam, UCSB & KITP

The Current State of Quantum Algorithms [[Podcast](#)][[Audio](#)][[WebCam](#)]

Auditorium

<http://online.itp.ucsb.edu/online/bblunch/>