The Howard University
Department of Physics and Astronomy
presents

Dr. William Phillips, NIST
1997 NOBEL PRIZE IN PHYSICS

Quantum Information

Quantum information is a field that combines quantum mechanics and information science. A key feature of most quantum information systems is the qubit, or quantum bit, that plays a role analogous to that of an ordinary bit of information in classical digital information systems. While in such classical information systems, digital information is stored in registers of bit, each of which may be "zero" or "one." In quantum information, the storage is in quantum bits that can be a quantum superposition of zero and one. Furthermore, these bits can be entangled with one another. This results in new opportunities for information transfer and processing. Among the examples are quantum communication, where the laws of quantum mechanics guarantee the security of the transmission against eavesdropping, and quantum computing, where certain kinds of problems become computable - problems that would not be practicably solvable on classical computers.