

**PRESS RELEASE
WINNERS ANNOUNCED
1993/1413H KING FAISAL INTERNATIONAL PRIZE
FOR
SCIENCE**

Topic: PHYSICS

The 1993 King Faisal International Prize for Science (Physics) was awarded jointly to:

**Dr. Herbert Walther
and
Dr. Steven Chu**

Both winners are distinguished scientists in the field of Quantum Optics, a rapidly developing research area that is considered one of the more novel and important in contemporary physics.

Looking to a beam of light as a stream of massive particles has been known since Newton. Various experiments, however, have demonstrated that light possesses a wave aspect. Einstein emphasized that light consists of quanta of energy and is comprised of photons. Because of the discovery of the relation between the energy and the frequency of light's quanta, he obtained his Nobel Prize. However, the real nature of light remained obscure.

The development of the field of Quantum Optics has, apart from its academic importance, a fundamental importance in technology. It allows us to use light to send and receive information.

Dr. Herbert Walther, a German national, is a Director of the Max Planck Institute for Quantum Optics and a Professor of Physics at Munich University. His original and outstanding research has contributed greatly to the development of Quantum Optics. Dr. Walther was one of the first to investigate fundamental quantum phenomena involving single atoms and photons. To understand more about the nature of photons it is necessary to investigate them in vacuums. It is also essential to isolate each of them from the others.

Professor Walther had the idea to build traps from electromagnetic fields and use them for hunting single photons, exactly as Mayer did some years ago with electrons. Professor Walther succeeded in isolating a single photon and studying its quantum mechanical characteristics in vacuum. By doing so he was able to open the field of quantum optics and started a large number of experiments which enabled us to speak more about the nature of light.

Dr. Steven Chu, an American, is the Chairman of the Department of Physics at Stanford University. Dr. Chu's work concentrated on experiments with single positronium and monium atoms. He developed the technique of optical cooling and trapping of atoms and used them to study delicate systems in experimental Quantum Optics. His discovery of new instrumentation and its utilization to expand the frontiers of Quantum Optics secures him a leading position in his field.