GENEALOGY DATABASE ENTRY

Heisenberg, Werner Karl 1901- 1976

DEGREE: PhD DATE: 1923 PLACE: Munich
TEACHER/RESEARCH ADVISOR: Sommerfeld

Nobel Prize for physics in 1932 for his contributions to quantum mechanics; presented in 1922 a model for the Zeeman effect; with Born and Jordan developed the matrix form of quantum mechanics; applied the quantum theory, along with electron spin, to the Zeeman effect, the helium atom and other problems; announced in 1925 that the quantum mechanics of atoms should contain only relations between experimentally observable quantities, which formalism became the starting point for the new quantum mechanics; formulated in 1927 the Heisenberg uncertainty principle; showed that a quantum-mechanical exchange integral could account for the strong molecular magnetic field in the interior of ferromagnetic materials; formulated a general gauge-invariant relativisitc quantum field theory that led to the creation of a relativistic quantum electrodynamics; developed the neutron-proton model of the nucleus by introducing the concept of the nuclear exchange force and the formalism of isotopic spin and serving as the basis for contemporary nuclear physics.

1. *Dictionary of Scientific Biography*; Charles Scribner's Sons: 1970-1990; vol. 17, p394-403.