the optical properties of the excitonic polaritons and has, for example, shown that the appropriate boundary conditions to use in theoretical interpretations depend on the experimental conditions.

Physicists among 1983 IEEE award winners

Among the 1983 award winners of the Institute of Electrical and Electronic Engineers are Abe Offner, who received the Cledo Brunetti Award, and Erich P. Ippen and Charles V. Shank, who jointly received the Morris E. Leeds award.

Offner is the principal optical scientist for the Perkin–Elmer Corp. in Norwalk, Connecticut. Specializing in the design of optical systems for use in the semiconductor industry, he designed an innovative annular-field all-reflecting optical system that led to the first successful projection wafer-mask aligner used in the manufacturing of integrated circuits. He joined Perkin–Elmer in 1947 and, for the past 35 years, has contributed to many of the company's pioneering optical achievements. The award honors his invention and design of the optics that made possible the projection-lithography system that were crucial to the advance of integrated-circuit manufacture.

Ippen is professor of electrical engineering at MIT. Shank has been with Bell Laboratories in New Jersey since 1969; in 1976, as head of the Quantum Physics and Electronics Department, he worked on extending time-resolved optical spectroscopic techniques into the femtosecond time domain. The award honors both men for their pioneering contributions to extending the techniques of time-domain measurement into the subpicosecond range. (See PHYSICS TODAY, December 1982, page 19.)

Norwegian physicists present Norsk Data and Simrad prizes

Jon Magne Leinaas (University of Oslo) has received the Norsk Data Award in particle physics and Tycho Jaeger (Norwegian Defense Research Establishment) has received the Simrad Prize for electro-optics. The prizes were presented at the annual meeting of the Norwegian Physical Society.

Leinaas is being honored for his work in theoretical physics, in particular for his contributions to understanding the geometrical and topological aspects of gauge theories. Recently he has collaborated with John S. Bell (CERN) in an investigation of the behavior of elec-

trons in accelerator rings. Bell and Leinaas showed that the acceleration affects the particles in a similar way as a strong gravitational field. The interaction should lead to a heating of the particles.

Jaeger has played a leading role in establishing a research team at NDRE to work on lasers, lens design, optical coatings, infrared detectors and imaging systems, and atmospheric physics relating to thermal imaging. The efforts of this group have resulted in a number of practical devices, such as a laser rangefinder and an infrared tv camera.

ACS presents awards to Rabinovitch and Zwanzig

At its April 1984 meeting, the American Chemical Society will present the Peter Debye Award in Physical Chemistry to B. Seymour Rabinovitch for his contributions to unimolecular reaction kinetics, and the Irving Langmuir Award in Chemical Physics to Robert W. Zwanzig for his contributions to statistical physics.

Rabinovitch, who is professor of chemistry at the University of Washington in Seattle, received his PhD in 1942 from McGill University. He served in the Canadian Army 1942–46, and spent two years at Harvard University before joining the University of Washington faculty in 1948. He was named professor of chemistry in 1957.

Rabinovitch and his students demonstrated the validity of the statistical approach for gross thermal reactions and for specific monoenergetic rate constants. Their discovery of the inverse kinetic isotope effect and development of the theory of centrifugal effects have helped make unimolecular reaction kinetics a precise science.

Zwanzig is Distinguished Professor of Physical Science of the University of Maryland. He received his PhD from Caltech in 1952. After a three-year research fellowship at Yale University, he joined the staff at John Hopkins University as assistant professor. Zwanzig spent 1958–66 as a research chemist at NBS and joined the University of Maryland faculty in 1966.

His projection operator technique is a very general method that simplifies complicated calculations. He first used the operators to derive equations describing time-dependent processes in fluids to uncover the underlying molecular dynamics; since then the technique has been applied to a wide variety of problems.

Zwanzig's earlier work applying perturbation theory to obtain thermodynamic properties of liquids has had a major influence on workers in equilib-