

POWER MODULE



Model 2202

To regulate an AC-line connected load by means of a small DC signal from an automatic control instrument. It supplies large amounts of power for control of resistive heaters, thermo-electric elements, light sources, etc. in temperature controlled ovens, vacuum deposition equipment, infrared heat sources, temperature baths and other applications. The instrument features a pulse-width-modulated zero crossing - fires TRIAC circuit to minimize RF Interference, electronic protection against current overloads and voltage transient, and provides linear control to a AC power line up to 25 Amp. (110 V or 220 V).

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LABORATORY Temperature Controller



Model 5301-E

With an input circuitry designed to accept resistance or voltage generating temperature sensors such as GaS-diodes, thermocouples, Ge & Pt Sensors, Carbon Resistors and Thermistors. The 5301-E, three mode controller offers temperature regulation to better than 0.01°K (or °C) in Vacuum chambers, Cryogenic dewars, Optical ovens, Tensile strength test apparatus, etc. for physics, metallurgy, chemistry and other scientific fields where the control and temperature range requirements are broad or change frequently. Set point readout is either directly in mV or Ohms (4-terminal measurement), with unlimited temperature range. Proportional, rate and reset modes are all internally adjustable, allowing to tune the controller to the thermal time constants of the process. 100 Watts, DC output or up to 5KW with Model 2202.

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obituaries

many friends and colleagues, always found him friendly and ready to help regardless of the time required. Even by Japanese standards, one could not easily find a more self-effacing and modest individual. Aside from his family, a little fishing and the care of his garden, his life centered on his research and his teaching. He will be missed for a long time by all who knew him.

GERHARD L. WEISSLER

*University of Southern California
Los Angeles*

YOSHIO TANAKA

*Air Force Cambridge Research Laboratories
Bedford, Massachusetts*

Guenter Schwarz

Guenter Schwarz, internationally known as an innovator in physics education, died on 17 November at the age of 60. He was a member of the faculty at Florida State University for 25 years and served as head of the department of physics from 1952 until 1956. A native of Cologne, Germany, Schwarz received an engineering degree from the Technische Hochschule, Berlin, in 1938 and the PhD in physics from Johns Hopkins University in 1942.

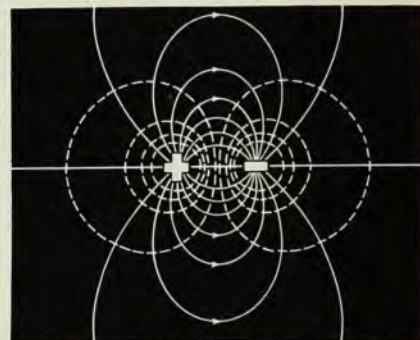
Pursuing an early interest in x-ray spectroscopy, Schwarz spent the war years at the University of Illinois as instructor and assistant professor of physics. In 1946 he returned to Joyce A. Bearden's laboratory at Johns Hopkins as a research physicist and in 1949 moved to Florida State, where he established an x-ray laboratory. That Schwarz would have chosen a research field in which precision almost becomes art was characteristic.

At Florida State Schwarz's interest in physics education gradually began to dominate his professional activity, and by 1958 all of his research was in problems related to physics pedagogy. He spent that year with the physical science study committee at MIT working on the PSSC high-school physics course. After returning to Florida State he joined Stanley Marshall of the department of science education in a program that eventually resulted in the use of the PSSC course by 85% of Florida high schools. Later he also worked with the project physics program.

Schwarz was a member of the panel whose proposals led to the formation of the Commission on College Physics. He was a member of the College Entrance Examination Board's committee of examiners during 1966-69. In 1966 the Center for Research in College Instruction of Science and Mathematics

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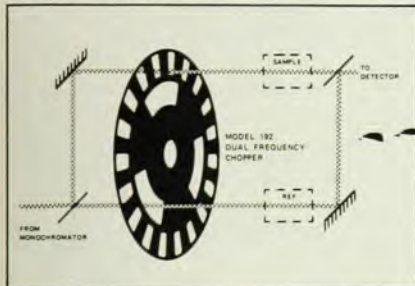
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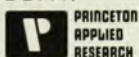
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(CRICISAM) was established, and when the Florida State campus was designated as its location, Schwarz was appointed director. He served in this capacity until CRICISAM was disbanded in 1971 and was instrumental in the development of its very successful computer-assisted (CAI) calculus course.

One of the first people to recognize the potential benefits that could be ex-



SCHWARZ

pected from the use of computers in physics instruction, Schwarz pursued all facets of this application of computers. He gave and published several invited papers in this field, including the 1969 review and survey in PHYSICS TODAY.

He was actively interested in the development of apparatus for physics instruction and served as apparatus editor for the *American Journal of Physics*. He founded and was president of Search Corp, an apparatus company. In November he submitted the final manuscript of his survey article on low-friction laboratory equipment that appeared in the December special apparatus issue of *The Physics Teacher*. This was the last of his many contributions to the teaching of physics.

At the University of Illinois, at Johns Hopkins, and at Florida State University, Schwarz touched the lives of hundreds of students and colleagues. His intense concern for the individual characterized his counsel and advice. An accomplished pianist and artist, he was a humanist among scientists. He joined with colleagues in music, art and the humanities to develop courses and seminars that sought to bring alive to students the melding of science and art.

STEVE EDWARDS

Florida State University
Tallahassee □

COMPUTER PLOTTER



Model 1653

A high speed, 22 inch recorder designed to operate on-line to scientific and general purpose computers in graphic output applications.

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