

LETTERS

of Technology, Princeton, Rutgers, New Jersey Institute of Technology and the SRI-David Sarnoff Research Center (with places reserved for additional industrial members). To induce this cooperation, we offered funding for an Advanced Technology Center in Surface Engineered Materials "distributed" across the incorporators. Thus the consortium acts as a holding company that operates not only our own center but also the Sematech Center of Excellence. Clearly, the support for the latter enterprise could not have been achieved without the support and intervention that fostered the former.

More generally, the state's high-technology community is represented on the governing board of our commission, and through this and other means exercises considerable influence over public policies on science and technology as they pertain to maintaining a sound economic environment for growth of technology-based enterprise. To take just one example, AT&T Chairman and CEO Bob Allen volunteered to head the citizen's committee that successfully campaigned for last year's \$350 million jobs, education and competitiveness bond issue, through which higher education generally, and several of our centers in particular, will be funded. All this activity should result in a continuing awareness that New Jersey is, indeed, a "pole" for physics research and education.

EDWARD COHEN

New Jersey Commission on Science
and Technology

6/89

Trenton, New Jersey

Quantized Transport: A Countered Query

A news story in the November 1988 issue (page 21) discussed the quantization of the electrical conductance of a short and narrow conductance channel in units of $2e^2/h$. In particular, the question was raised of why this effect, observed independently by a group from the Netherlands and by experimenters at Cambridge University, was not predicted theoretically. I want you to know that this effect was in fact predicted by Peter Marquardt and G. Linz of the University of Cologne, FRG. These authors discussed quantum mechanical transport through a narrow channel in exactly the terms referred to by Douglas Stone in your news story, namely, the electron cut-off wavelength λ_c of a waveguide of diameter d , and they came up with the conductance $G \propto h\lambda_c/2 \propto ne^2/h$,

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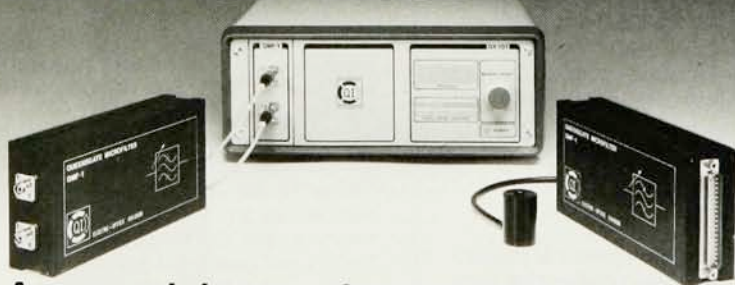


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A CALL FOR PAPERS

COMPUTERS IN PHYSICS

*A new periodical
from the
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of Physics*

Computers in Physics, a combination magazine and peer-reviewed journal published bimonthly by the American Institute of Physics, is soliciting papers on computer use in physics and astronomy.

We are interested in papers which describe novel ways physicists have applied computers to their work in the lab or the classroom, as well as details of original research about computer applications in related fields such as optics, acoustics, geophysics, rheology, crystallography, vacuum science, and medical physics.

Please address all papers for this new publication to Robert R. Borchers, Editor, **Computers in Physics**, PO Box 5512, Livermore, CA 94550. Papers should be organized according to the American Institute of Physics Style Manual.

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where $n = 0, 1, 2, \dots$ and $\lambda_c = 2d$.

The only problem with this prediction of Marquardt and Nimtz is that it did not have much luck with several referees of scientific journals of high standard and is therefore not in the open literature. The authors have since developed the concept of an electron cutoff wavelength (COW) transistor¹ on the basis of these ideas.

Reference

1. P. Marquardt, G. Nimtz, *Appl. Phys. A* **47**, 317 (1988).

GÜNTHER HARBEKE
Paul Scherrer Institut
Laboratories RCA
Zurich, Switzerland

1/89

High School Physics: Getting Beyond 20%

Why do only 20% of our high school graduates have a course in physics? If a student is going to become a farmer, electrician, automobile mechanic, carpenter, plumber, air conditioner serviceman, photographer or news reporter, the school wants the student to have a vocational program, and it is thought that physics is not for this student. Our new Secretary of Labor has said the government needs programs to teach "skills" for industry. "Skills" are not as important as knowledge.

How can the American Institute of Physics improve the rate of physics study? Look at what the competition is doing. The Future Farmers of America run newspaper advertisements and TV commercials.

The public needs to know that physics is in our homes, our automobiles, our TV, radio and telephone. Parents need physics to answer their children's questions. My neighbor's six-year-old girl asked her mother, "What holds the Moon up?" Her mother, an art teacher, would know where to put the Moon in a painting, but had no idea what holds it up.

Our schools have band-booster clubs that parents join to support their school. Parents help to hold athletic awards banquets. I do not know of any parents' group that encourages the study of physics.

Our local newspaper has special editions to honor athletes and vocational students. The paper never has a special edition to honor physics students.

AIP needs to promote physics as a part of everyone's life. The high school physics class must be for everyone, and for more than one year.

JAMES F. JACKSON
Carlisle, Indiana

2/89

AIP'S DIRECTOR OF PHYSICS PROGRAMS REPLIES: James F. Jackson asks why only one in five high school students takes physics. In my judgment, the most basic answer to his question is this: Americans do not live in a scientific culture. Oh yes, our economy depends on science, and yes, Americans are captivated by technological devices. But witness the absence of science in American history textbooks: The authors of these books recognize art, music, literature and religion as vital parts of American culture; however, they say little or nothing about science. While no educated American would happily acknowledge ignorance of Michelangelo, Mozart or Shakespeare, ignorance of Newton, Faraday and Bohr can be admitted without remorse.

The minor place of physics in the public mind is due, at least in part, to physicists themselves. Physics is not taught as a part of general education, but rather as a preprofessional course. As a consequence, the physics that we witness "in our homes, our automobiles" is bypassed in favor of those topics that prepare a student for further physics.

Many physicists within the American Institute of Physics and its member societies share Jackson's concerns. Within these professional organizations there are many people pursuing a number of programs whose activities are directed toward the very concerns he expresses. Perhaps we are not doing enough, and letters like his remind us that we need to do more.

JOHN S. RIGDEN
American Institute of Physics
New York, New York

10/89

Astrophysical Stars of the Silver Screen

In his letter in the December 1988 issue (page 13), Alwyn Eades asks if the reader can recall a film in which a scientist appears as a "normal person." Immediately two fairly recent films came to mind that I believe would qualify. Interestingly, in each film the scientist character is an astrophysicist and is female. The films are *Roxanne* and *Top Gun*. For the most part in each film it is incidental to the plot that the love interest of the male star is endowed with an advanced degree, but it is consistent with the recent Hollywood trend permitting beauty also to possess brains. Perhaps a new stereotype is emerging.

RICHARD BREEDON
National Laboratory for High-Energy
Astrophysics (KEK)
Tsukuba, Japan. ■

3/89