

**NEW
and
important**

Research into Sonar Signal Processing and Displays

NUCLEUS POSITIONS
up to \$13,615

Now that the rapidly expanding technology of "inner space" has opened up new dimensions in ocean surveillance, there is an urgent need for an order-of-magnitude advance in signal processing and display techniques for **target detection, classification, and tracking** . . . and for effective communications between friendly forces. A special RESEARCH GROUP with this important mission is being set up within the U.S. NAVY UNDERWATER SOUND LABORATORY at New London, Connecticut—for 23 years key research laboratory for ASW applications of SONAR, RADIO, INFRARED, and RELATED PHYSICAL SCIENCES.

This RESEARCH GROUP is part of a growing R&D program which will provide the foundation for advanced surveillance system designs of the future. This GROUP will be closely associated with scientists engaged in acoustics research and military oceanography . . . and will have ready access to experimental facilities and results characterizing "real-world" signals as influenced by the ocean medium and its boundaries. **This may prove to be a once-in-a-career opportunity to pioneer a major technological evolution.**

1. **RESEARCH PHYSICIST** (\$13,615 to start*)—to investigate the application of optical techniques, including lasers, fiber optics, and other new advances in physics to the general problem of signal processing and analysis in multi-channel **high-bit-rate** situations.
2. **RESEARCH PHYSICIST** (\$11,725 to start*)—to conduct experimental and analytical studies of acoustic signals, **particularly as influenced by the rough surface and multi-layered bottom of the ocean.** (The USL BERMUDA LABORATORY and extensive shipboard experimental facilities are now available for this program.)
3. **RESEARCH Electronics ENGINEER** (\$13,615 to start*)—to conduct theoretical and experimental investigations into applications and extensions of electrical communications theory—**particularly information, decision, and sampling theory**—so as to evolve new methods and techniques of signal processing and utilization.
4. **RESEARCH MATHEMATICIAN** (\$13,615 to start*)—to investigate the application of advanced mathematical approaches—especially in the field of random processes—to signal processing, analysis and display problems.

* These starting salaries will be increased on a regular step basis. All the benefits of Career Civil Service are included. Other positions involving less program responsibilities are also open . . . but ALL positions call for a flair for independent **free-wheeling** research making use of all promising scientific possibilities.

**consider
these
benefits**

the opportunity to pioneer a new field; the freedom of thought and action—and the facilities—to do a real job; the opportunity for graduate study at nearby universities; the unusual cultural and recreational diversions of the Connecticut coast; and your association with one of the best-regarded research activities in the country.

Please send personal qualifications direct to Code 150E;
Attn: Dr. W. A. VonWinkle.

U.S. NAVY UNDERWATER SOUND LABORATORY
New London, Connecticut

An Equal Opportunity Employer

liquid state. The program will include papers on liquid theory and structure, dielectrics, x-ray and neutron diffraction, nuclear magnetic resonance, ultrasonics, viscoelasticity, positron annihilation, and liquid chemistry.

Details may be obtained from Joseph L. Hunter, Department of Physics, John Carroll University, Cleveland, Ohio.

Solids

A symposium on fluctuation phenomena in solids and solid-state devices will be held at the University of Minnesota on May 22. The purpose, format, and content of the meeting will resemble those of the fluctuations-in-solids symposia that were organized for several years by J. J. Brophy of ITT Research Institute (formerly Armour Research Foundation).

Interested persons should write to Dr. A. van der Ziel or Dr. K. M. van Vliet, Electrical Engineering Department, University of Minnesota, Minneapolis 14, Minn. Those wishing to contribute to the program should supply a 100-word description of the proposed paper.

Nuclear Instrumentation

The Institute of Electrical and Electronics Engineers, the National Aeronautics and Space Administration, and the Atomic Energy Commission are jointly sponsoring a symposium on nuclear instrumentation in space and in the laboratory. Organized by the IEEE Professional Technical Group on Nuclear Science, the meeting will be held October 28 to 30 in Philadelphia, and will include an exhibit of instruments. The technical program will cover laboratory instrumentation, nanosecond circuitry, radiation detectors, space nuclear propulsion, space instrumentation and phenomena, reactor-control instrumentation, and radiation effects.

One- to three-hundred-word abstracts of contributions should be sent by July 1 to W. A. Higinbotham, Brookhaven National Laboratory, Upton, Long Island, N. Y. 11973. Inquiries should be directed to Louis Costrell, National Bureau of Standards, Washington 25, D. C.