

## Hewlett-Packard Europhysics Prize for 1984

As briefly announced in the January issue of *Europhysics News*, the 1984 Hewlett-Packard Europhysics Prize for outstanding achievement in solid state physics has been awarded to

G. Binnig and H. Rohrer

"for building the scanning tunnelling microscope".

The new instrument is based on the phenomenon of vacuum tunnelling: if two electrodes are sufficiently close to each other but make no contact, the application of a voltage results in a flow of electrons across the gap. The intensity of the current depends on the work function and, as Binnig and Rohrer demonstrated in 1981, is an exponential

function of the effective tunnel distance over several orders of magnitude.

In the configuration devised by the prize winners, one electrode is the sample under study and the other a very fine metal tip, which is made to scan over the surface. Part of the secret behind the success of their instrument lies in the ingenious electrode positioning and the rigorous suppression of ambient vibrations. Associated with the scanning is a modulation of the gap distance which makes it possible to discriminate between current changes resulting from work function variations and topography. Consequently a four-dimensional picture of the surface can be obtained.

Since 1982 the scanning tunnelling microscope working in ultra high vacuum has found many applications in surface physics. Binnig and Rohrer's group at IBM Research Laboratory, Rüschlikon (Switzerland) has produced remarkable results, for example, on the occurrence of single atomic steps on oriented surfaces, and the configuration of adatoms. By comparing pictures obtained at different tunnelling currents, even local electron densities can be extracted.

The prize, donated by the Hewlett-Packard Co. and worth Sw.Fr. 20000.- will be presented to the award winners at the 6th EPS General Conference in Prague on 28 August.

**Proposals are now invited for the 1985 award.** These should concern recent work in the area of physics of condensed matter, specifically work leading to advances in the fields of electronic, electrical and materials engineering. They may be submitted by EPS members individually, or as representatives of a Division and should include:

a clear definition of the work in question;

a short biography of the candidate;

a list of relevant publications and reprints referring to the work recommended.

Details should be sent to the Selection Committee,

c/o EPS Secretariat,

POB 69,

CH-1213 Petit-Lancy 2,

to arrive not later than 10 August 1984.

All information will be treated as confidential.

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#### ***Formulae and Methods in Experimental Data Evaluation with Emphasis on High Energy Physics***

This publication is a research physicist's handbook, written by physicists in the field or specialists working in close contact with experiments. It is a reference work offering definitions, short formulae, outlines of methods and references to in-depth literature. Its purpose is to be both a practical reference and an easily accessible introduction to a wide range of topics, for the frequently needed and the fast forgotten — useful for the experienced physicist as well as for the newcomer.

Most of the subjects are of a general nature, such as statistical and numerical methods, group theory or computer usage. Analysis aspects of particle physics and details about particle detectors are also included.

The publication appears in three paperback volumes of A5 format, in total ca. 850 pp. Price for the 3 volumes: Sw.Fr. 50.-

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EPS regrets to announce the death of Albert Kastler - a founder member of the Society. An appreciation will be published in the April issue.

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