

PHYSICS AND ASTRONOMY

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ABSTRACTS

Thermistors: Their Construction and Applications. A. J. C. L. HOGARTH, Department of Chemistry, DePauw University, Greencastle, Indiana 46135.—Although thermistors have been manufactured commercially for nearly forty years very little has been written about them in book form. Indeed, in most texts, their existence is merely inferred if it is mentioned at all. This is an unfortunate situation because thermistors are versatile components finding applications in fields as diverse as washing machine manufacture and meteorology.

'THERMISTOR', an acronym derived from THERMally sensitive resISTOR, was originally the name given to a solid state electronic component developed simultaneously in Holland and the U.S.A. during World War II. This device exhibited a very large negative coefficient of resistance over an extended temperature range. Today the name THERMISTOR implies a device made of semiconducting material that possesses an electrical conductivity highly sensitive to temperature.

A thermistor is constructed from a sintered ceramic composed of a mixture of several metallic oxides, the latter being chosen usually from the elements manganese, nickel, cobalt, copper and iron. By varying the composition and size of the semiconducting elements, resistance values between one and one million ohms may be achieved. The devices may be encapsulated or not as desired, and their physical size may vary considerably.

Their applications are diverse even without success at the obvious task of temperature sensing, they have a wide range of uses in electronic time delay circuits, as capacitors or inductors in low frequency oscillators, as surge suppressors, as liquid and gas flow monitors and many other areas.

The Determination of Sub-micron Particulates by the Howe-Wilson Method. ROBERT H. L. HOWE, West Lafayette, Indiana 47906 and INGI ILGEN, Istanbul Teknik Universitesi.—The mathematical approach for the determination of sub-micron particulates by the Howe-Wilson method is presented. Some experimental results are discussed.

Techniques of Measurement and Analysis in High Energy Muon-Nucleon Interactions in Nuclear Emulsion Targets. GERALD P. THOMAS, Department of Physics and Astronomy, Ball State University, Muncie, Indiana 47306.—Techniques will be discussed for event scanning and selection, and measurement of multiplicities, ionizations and angles of secondaries. Particular attention will be paid to problems of angle measurement of the scattered lepton primary in the 1-150 GEV incident primary energy range. Also on-line, microcomputer-based, techniques for calculation of angles will be mentioned.