A WEHNELT CATHODE RAY TUBE MAGNETOMETER

ABSTRACT

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The paper presents briefly the theory, description and the results obtained with a new apparatus for measuring the horizontal component of the earth's magnetic field.

A specially designed cathode discharge tube is used, equipped with an adjustable Wehnelt hot lime cathode, the whole mounted so that it is freely turned about a vertical axis. The mounting thus avoids the elimination of the earth's magnetic field for a zero reading of the deflection and the hot lime cathode gives rise to slow moving electrons so that the deflection recorded on a photographic plate is of a measurable magnitude. The deflection is compared with that produced simultaneously by a known magnetic field due to a circular coil so that the use of electrostatic plates is not necessary and making the results independent of the ratio e/m.