

KC 型直視磁力計について (概報)

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The KC Type Magnetometer for Direct-Vision* (Visually Recording Magnetometer)

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ABSTRACT

In order to make use promptly the geomagnetic data in the ionosphere forecasting, it is desirable to record the geomagnetic variation in a light room where we can see the geomagnetic condition directly at any time. Some years ago, the writer constructed a magnetometer for direct-vision. Recently, he also succeeded in making continuous recording with higher accuracy.

The light beam which comes from the mirror of the variometer is reflected at the edges of two prisms, being separated into two rays which illuminate the respective photo-tubes.

The photo-tubes are connected with an electric circuit in which the balance is kept when the tubes are illuminated equally. If it is supposed that the balance is broken, the amplified electric current flows in the Helmholtz coil of which field deflects the magnet of the variometer so as to keep balance in the circuit with the aid of negative feed back. This current changes proportional to the variation of the geomagnetism, and is recorded by a potentiometric recorder (single point).

The main characteristics of the magnetometer are as follows:

1. It is the continuous and visual record.
2. It is the remote recorder (we use one which the distance between recorder and magnetometer is 300 meters).

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The full paper will be published in near future.

3. The scale values is kept constant within the error of 1% at full scale (we-called a-factor is very small), and do not change by the unevenness of the characteristics of the many electron tubes.
4. Corresponding to the fluctuation of 1 volt in the power supply (100 volts A.C.), the error amounting to 0.01—0.1%.
5. Owing to use the zero method we-called the forged effect is very small.
6. The scale value on the recording paper $0.5\gamma\text{—}3\gamma/\text{mm}$.

The variation of $50\gamma\text{—}200\gamma$ can be recorded, and we can make these values to variable by a same magnetic variometer. The natural period amounts to 0.4—1.5 seconds.

The magnetometer may be used also as X-, Y- or any component variometer by which the forged effects are exactly eliminated.

A highly sensitive magnetometer (scale value $2\times 10^{-3}\gamma/\text{mm}$) can be also constructed with the aid of positive feed back.