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## **AUTOMATIC LONG TERM SURVEY OF MAGNETIC FIELDS IN RESIDENTIAL AREAS. INSTRUMENTATION AND MEASUREMENTS**

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### **Abstract**

In this paper we present the results of the long term survey of the low frequency (50 Hz÷ 20000 Hz) background magnetic induction (B) in some residential areas. Firstly, we present the triaxial measurement system proposed, realized and calibrated by authors, which has an uncertainty of about 5%. This instrument can make the automatic long term survey with the characterization of the magnetic fields, being adequate to estimate the human exposure. We used our instrument to perform both spot measurements (time and frequency domain representations of the three fields' components) and an automatic long term survey of the field components and of the resultant magnetic field, with their recording and statistical processing. Statistics were made for hours, days, weeks, and a month. The mean values of background magnetic fields for an 8 day survey period in a laboratory was 139 nT and 50 nT for a 32 day survey period in an apartment kitchen.

*Key words:* automatic measurement system, background magnetic field, long term survey, residential areas

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