

# **Sensorless measurement technique for characterization of magnetic material under nonperiodic conditions**

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## **Abstract-**

**This paper deals with the sensorless characterization of magnetic materials under nonperiodic conditions. A volt-amperometric method based on general physical principles has been adopted to do the measurements. Starting from the concept of magnetic hysteresis as a multibranch nonlinearity with nonlocal memory, we provide a description of the proposed measurement procedure, focusing on two significant topic points: 1) the determination of a well-known (within a certain interval of confidence) initial state of magnetization and 2) the effect on the final experimental results of the offset introduced by the instrumentation. Finally, we present experimental results done on a sample of soft ferrite, showing how the method is capable of measuring phenomena like accommodation or noncongruency of minor loops.**

**Index Terms-** Magnetic hysteresis, measurement, modeling

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