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Calibration Specification for Constant Magnetic Field Coils

恒定磁场线圈校准规范

(English Translation)

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Appendix A Uncertainty Evaluation Example of Coil Constant (8)

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Introduction

JJF 1071 "Rules for the Compilation of National Metrology and Calibration Specifications", JJF 1001 "General Metrology Terms and Definitions" and JJF 1059.1 "Evaluation and Expression of Measurement Uncertainty" together constitutes a basic series that supports the formulation of this specification.

This specification is released for the first time.

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Constant magnetic field coil calibration specification

1 Scope

This specification applies to the calibration of constant magnetic field coils with a coil constant of (1x10-5~1x10-2)T/A.

2 Reference documents the following documents are cited in this specification.

JJF 1013 Commonly used terms and definitions of magnetic measurement for dated reference documents, only the dated version applies to this specification; for all undated references the latest version (including all amendments) is applicable to this specification.

3 Term

The following terms and definitions defined by JJF 1013 apply to this specification.

3.1 Magnetic field coil A coil that reproduces the magnetic field in the form of current flowing through the winding.

3.2 Magnetic field uniformity heterogeneityofmagneticfield in a given area, the uniformity of the magnetic field generated at each point after the magnetic field coil is energized, and the coil constants at different points are commonly used the degree of uniformity is expressed.

3.3 equalareaofmagneticfield the relative difference between the magnetic induction intensity of each point and the center point after the magnetic field coil is energized does not exceed the given value range of an area.

4 overview

The magnetic field coil is a magnetic measuring tool used to reproduce the magnetic field, which is mainly used in the fields of magnetic measurement and magnetic parameter detection. magnetic According to the structure, the field coil can be divided into solenoid coil, Helmholtz coil, Maxwell coil, Bucker coil, etc.;

The current magnetic field dimensions can be divided into single-axis coils, two-axis coils, and three-axis coils.

When the current is applied to the winding of the magnetic field coil, the relationship between the strength of the magnetic field and the coil constant and current is as public.

Equation (1) shows.

B=KBI (1)

Where.

B---Magnetic induction intensity at the center of the magnetic field coil, T;

KB---the coil constant of the magnetic field coil, T/A;

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I---The current in the winding of the field coil, A.

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