Dissemination of the unit Tesla by calibration of magnetometers with DC fields and AC fields

NMR magnetometers

Quantity	Range	Conditions of measurement	Relative uncertainty
flux density *B*	1 mT to 2 T	**DC field**	$2 \cdot 10^{-5}$ to $1 \cdot 10^{-4}$

Magnetometers

Quantity	Range	Conditions of measurement	Relative uncertainty
flux density *B*	0,1 T to 2 T	**DC field** in elektromagnet field ⊥ long axis of sensor	$1 \cdot 10^{-4}$ to $1 \cdot 10^{-3}$
flux density *B*	0,1 µT to 0,2 T	**DC field** in field coil	$1 \cdot 10^{-4}$ to $1 \cdot 10^{-2}$
flux density *B*	$B \leq (21{,}22/a)$ mT (a = f /Hz)	**AC field** diameter of sensor < 100mm $f \leq 300$ Hz	$1 \cdot 10^{-3}$ to $2 \cdot 10^{-2}$
flux density *B*	**request required**	**AC field** diameter of sensor < 20 mm $f > 300$ Hz	$1 \cdot 10^{-3}$ to $2 \cdot 10^{-2}$

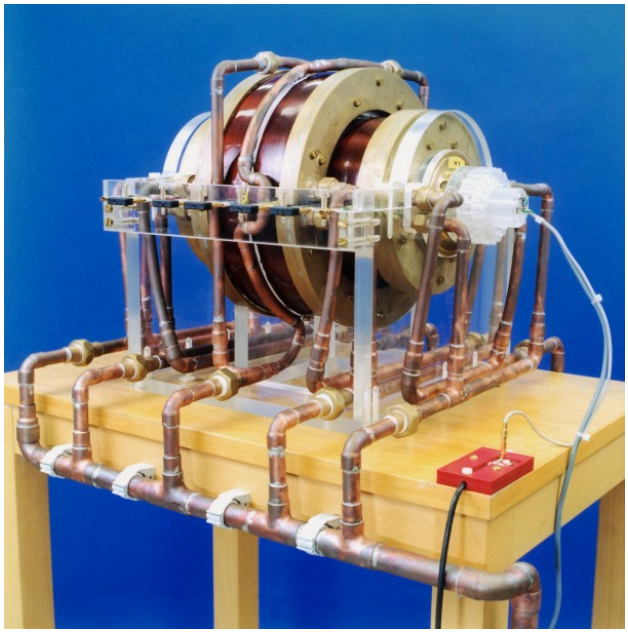
Search coils

Quantity	Range	Conditions of measurement	Relative uncertainty
turn area	$2 \cdot 10^{-3}$m^2 to 0,2m^2	fluxmeter and NMR	10^{-3}
turn area	10^{-4}m^2 to $2 \cdot 10^{-2}$m^2	mutual inductance and AC field	$5 \cdot 10^{-3}$
mean diameter of flat sensing coils	5 cm to 30 cm	from field profile, number of turns must be known	$1 \cdot 10^{-3}$ to $1 \cdot 10^{-2}$

contact: Dr. Martin Albrecht, Hans Harcken, Joachim Lüdke, Rainer Ketzler

© Physikalisch-Technische Bundesanstalt
Page created: 16/01/2007, last update: 11/05/2007, Hans Harcken

Magnetic Measurements



Watercooled field coil

allowing homogeneous fields
with flux densities up to 200 mT

© Physikalisch-Technische Bundesanstalt
Page created: 16/01/2007, last update: 11/05/2007, Hans Harcken