

## Dissemination of the unit Tesla by calibration of field coils as standards of DC fields and AC fields

Field coils as standards			
Quantity	Range	Conditions of measurement	Relative uncertainty
coil constant $k_0 = B / I$	$0,8 \text{ mT} \leq B \leq 2 \text{ mT}$ $0,05 \text{ A} \leq I \leq 2 \text{ A}$	<b>DC field</b> in the centre is homogeneous within 2 nT over $\pm 2 \text{ cm}$	$10^{-5}$
coil constant $k_0 = B / I$	$2 \text{ mT} \leq B \leq 150 \text{ mT}$ $0,1 \text{ A} \leq I \leq 10 \text{ A}$	<b>DC field</b> in the centre is homogeneous within 2 $\mu\text{T}$ over $\pm 1 \text{ cm}$	$4 \cdot 10^{-5}$
coil constant $k_0 = B / I$	$100 \text{ nT} \leq B \leq 2 \text{ mT}$ $0,05 \text{ A} \leq I \leq 2 \text{ A}$	<b>DC field</b> short solenoide $L \leq 0,4 \text{ m}$ , $D \leq 0,35 \text{ m}$ Helmholtz coil	$10^{-4}$ bis $5 \cdot 10^{-3}$
frequency dependance $k(f) / k_0$	$I \leq 2 \text{ A}$ $U_{max} \leq 140 \text{ V}$	<b>AC field</b> $f < 10 \text{ kHz}$	$10^{-3}$ bis $1 \cdot 10^{-2}$
frequency dependance $k(f) / k_0$	$I \leq 0,5 \text{ A}$ $U_{max} \leq 40 \text{ V}$	<b>AC field</b> $f < 100 \text{ kHz}$	$10^{-3}$ bis $1 \cdot 10^{-2}$

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### AC measuring setup

two Helmholtz coil arrangements for magnetic fields with frequencies up to 30 KHz

