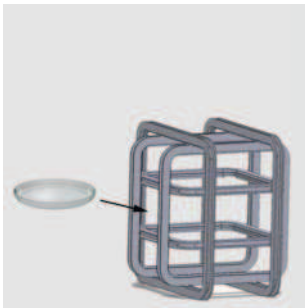




custom made magnetic coils and experimental equipment

- ☉ We produce handmade magnetic coils with high precision wrapping, especially important for double-wrapped coils.
- ☉ Coils will be individually designed for the requirements.
- ☉ We offer supporting equipment, such as electric shields, magnetic shields, magnetic field controller, and bi-polar amplifier to supply the coils in both polarities without manual switching.



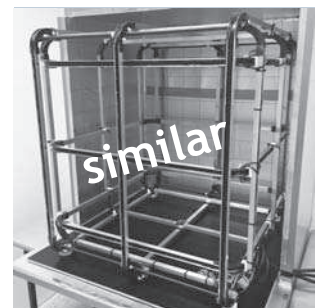
Small arena (Square Helmholtz design)

- Small coil arena for strong fields (up to 1100 μT)
- Size: 9 - 30 cm
- Axis: 1D, 2D or 3D
- Single-* or double-wrapped **



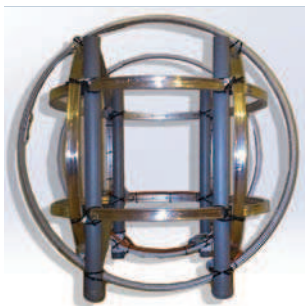
Small arena (Round Helmholtz design)

- One-dimensional easy access coils
- Size: 9 - 30 cm
- Axis: 1D
- Single-* or double-wrapped **



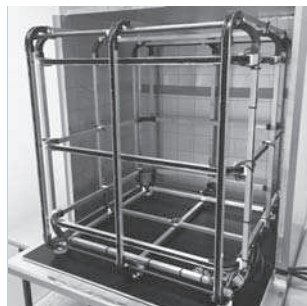
Medium arena (Square Helmholtz design)

- Medium-sized coil arena
- Size: 40 - 120 cm
- Axis: 1D, 2D or 3D,
- Single-wrapped*, double-wrapped ** or triple-wrapped***



Medium arena (Round Helmholtz design)

- Medium sized round coil arena for strong fields (up to 1080 μT)
- Size: 50 - 80 cm
- Axis: 1D, 2D or 3D
- Single-wrapped*, double-wrapped **, or triple-wrapped***



Medium arena (Square Merritt design)

- Medium sized coil arena with 40% larger working area
- Size: 50 - 120 cm
- Axis: 1D, 2D or 3D
- Single-wrapped*, double-wrapped **, or triple-wrapped***



Switching box

- Comes with every double and triple wrapped coil system
- Provides easy switching between sham-condition and field-condition.



coming soon

Large arena (Square Helmholtz design)

- Size: 2 - 10 m
- Axis: 1D, 2D or 3D
- Single-wrapped*, double-wrapped **, or triple-wrapped***
- For indoor and outdoor use

Large arena (Square Merritt design)

- Size: 2 - 10 m
- Axis: 1D, 2D or 3D
- Single-wrapped*, double-wrapped **, or triple-wrapped***
- For indoor and outdoor use



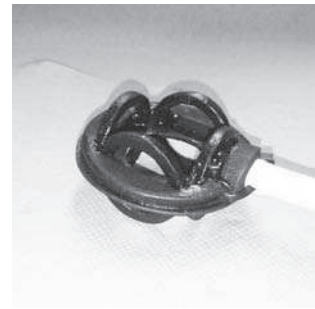
Bipolar power amplifier

- Output $\pm 25V$ and $\pm 2A$
- Input $\pm 10V$
- No fan noise (optionally: silent fan cooling 18dB)
- Voltage controlled for stable fields (****)
- Plug for electric ground
- Suitable for all coils offered
- Perfect link for computer controlled field conditions. Amplifies low power signals from a computer controller.

Field compensation kit

coming soon

- Suitable for medium and large coil systems
- Compensates field to a zero-field or bias-field condition
- Includes power amplifiers



Observer coils microscope inlay solution

- Applies defined magnetic fields to small samples.
- i.e. designed as a microscope table inlay to host the sample (i.e. petridish or glassslide)
- Example figure: a Helmholtz-like arena that fits to Leika confocal microscopes.
- Homogeneity: $\sim 1\%$ within 5 mm (will be optimized to the design of the microscope)
- Field max: $1000 \mu T/A$ (max. 1 A)
- Single-wrapped* or double-wrapped **
- Will be custom designed and optimized to fit your specific experimental setup or microscope

Explanations:

*) single-wrapped: each coil is wrapped by a single wire. Suitable for standard magnetic field experiments.

**) double-wrapped: each coil is wrapped by two exactly parallel wires. The current can be switched from parallel to antiparallel direction. Therefore, the field is either engaged, or is canceling itself out. It is useful for experiments which require a natural field condition (sham mode of coils), and therefore hosts the equal amount of current as in field mode. Using double-wrapped coils avoids secondary effects that may be caused by the current, by electric fields or by characteristic noise of the power supplies. The order of the parallel wires is swapped after each layer, such that no geometric bias induces to the netto magnetic field in sham-mode.

***) triple-wrapped: It is the same as double-wrapped, with a third single wire on top of the double wrapped coils. When the double-wrapped coil is switched to sham-mode, the field condition is equal to the ambient field. However, if the experiment requires a zero-magnetic-field in the control condition

(sham-mode), then the zero-field can be adjusted by the third wrap of wire. Also a specific bias-field can be adjusted within the range of maximum field strength.

****) voltage controlled: To generate constant magnetic fields, usually a current controlled amplifier is being used. However, the current control induced electrical noise, which disturbs the magnetic field experiments, and in a worst case generates electric fields. Therefore, our amplifier works with voltage control, to ensure an electrically and magnetically silent experimental setup. To avoid thermal drift we suggest to switch on the setup before conducting the experiments, and to monitor the field.

General:

- in multiaxial arenas, note that the coils have different dimensions in order to fit into each other. Therefore, the given size belongs to the smallest coils and outer dimensions are a few percent larger.
- The max. currents as given are for continuous usage. We will not take liability when exceeding the given max current. Please anytime monitor temperature, and prevent from overheating.

Coil specifications:

model	design	axis	wrap	size [cm]	field @ 2A [μT]	field max [μT]	Current max. [A]	hom. 5% [cm]	hom. 1% [cm]
small	HH, round	1D	1 or 2	9	800	800	2	4,5	2,7
	HH, round	1D	1 or 2	30	240	240	2	15	9
small	HH, square	1D, 2D, 3D	1 or 2	9	1100	1100	2	4,5	2,7
	HH, square	1D, 2D, 3D	1 or 2	30	340	340	2	15	9
medium	HH, square	1D, 2D, 3D	1, 2 or 3	40	340	510	3	20	12
	HH, square	1D, 2D, 3D	1, 2 or 3	120	110	165	3	60	36
medium	HH, round	1D, 2D, 3D	1, 2 or 3	50	720	1080	3	25	15
	HH, round	1D, 2D, 3D	1, 2 or 3	80	450	675	3	40	24
medium	ME3, square	1D, 2D, 3D	1, 2 or 3	50	280	420	3	35	25
	ME3, square	1D, 2D, 3D	1, 2 or 3	120	120	180	3	84	60
large	HH, square	1D, 2D, 3D	1, 2 or 3	200	170	340	4	100	60
	HH, square	1D, 2D, 3D	1, 2 or 3	1000	34	68	4	500	300
large	ME3, square	1D, 2D, 3D	1, 2 or 3	200	175	350	4	140	100
	ME3, square	1D, 2D, 3D	1, 2 or 3	1000	35	70	4	700	500
large	ME4, square	1D, 2D, 3D	1, 2 or 3	200	180	360	4	140	120
	ME4, square	1D, 2D, 3D	1, 2 or 3	1000	36	72	4	700	600