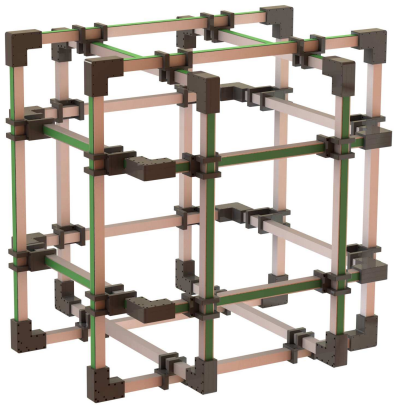
Dreidimensionale Helmholtzspule HHS 3D 5213-50
Three-Dimensional Helmholtz-Coil HHS 3D 5213-50



Beschreibung:
Mit der dreidimensionalen Helmholtzspule HHS 3D 5213-50 ist es möglich, ein beliebiges Vektorfeld zu erzeugen.

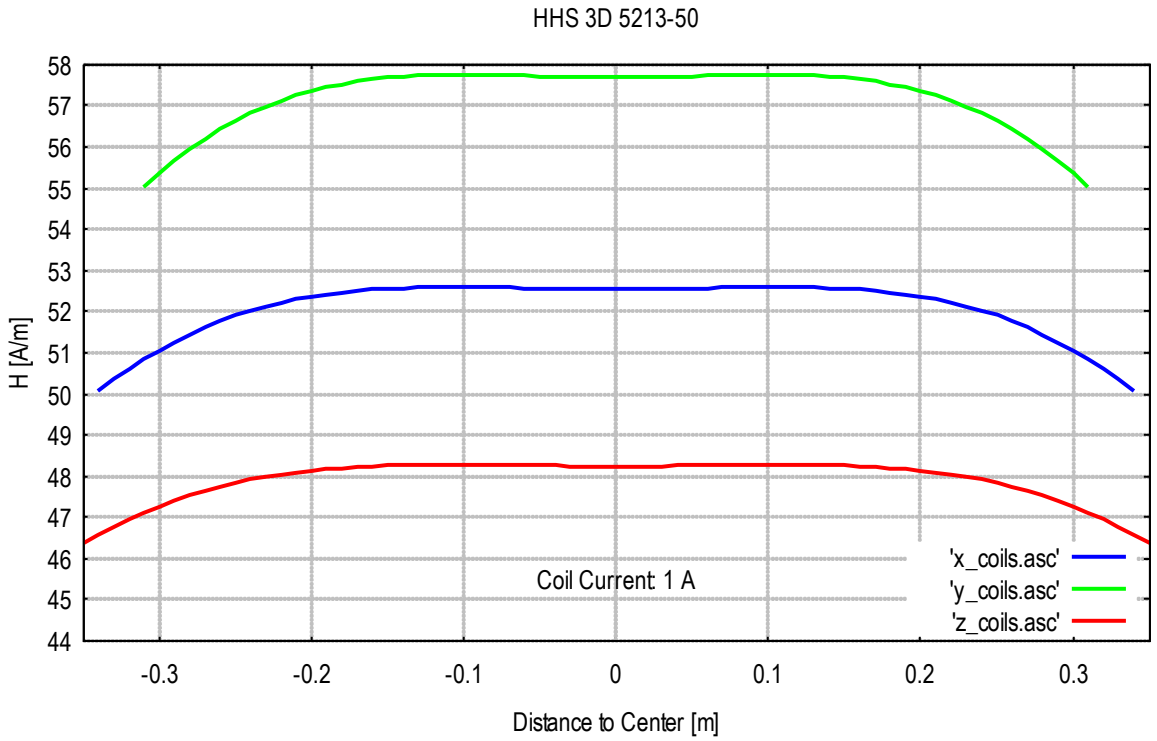
Description:
With the three-dimensional Helmholtz coil HHS 3D 5213-50 it is possible to create any vector field.

Technische Daten:		***Specifications:***
Frequenzbereich:	0 ... 20 kHz	*Frequency Range:*
Windungszahl (pro Spule):	50	*Number of turns (per Coil):*
Maximaler Spulenstrom:	8 A, 5 min.	*Maximum Coil Current:*
Spulenstrom, nominell:	5 A continuous	*Nominal Coil Current:*
Max. Magn. Feldstärke:	390 A/m, 5min	*Maximum Magnetic Field Strength:*
Mag. Nennfeldstärke:	240 A/m continuous	*Nominal Magnetic Field Strength:*
Resonanzfrequenz (pro Spule):	> 30 kHz	*Resonant Frequency (per Coil):*
Abmessungen:	1.4 m x 1.4 m x 1.3 m	*Dimensions:*
Gewicht:	Ca. 85 kg	*Weight:*

Technische Daten:	**Inner Coil (Y-Axis)**	***Specifications:***
Effektive Spulenabmessungen:	1.1 m x 1.1 m	*Effective Coil Dimensions:*
Spulenabstand gem. EN 55103:	62 cm	*Coil Separation acc. EN 55103:*
Magn. Feldstärke bei 1 A:	57,7 A/m	*Magnetic Field Strength, 1 A:*
Wirkwiderstand (Spulenpaar):	3.0 Ω	*Resistance (Coil pair):*
Induktivität (Spulenpaar):	19.08 mH (Coil Dist. 0.62 m)	*Inductance (Coil pair):*

Technische Daten:	**Center Coil (X-Axis)**	***Specifications:***
Effektive Spulenabmessungen:	1.21 m x 1.21 m	*Effective Coil Dimensions:*
Spulenabstand gem. EN 55103:	68 cm	*Coil Separation acc. EN 55103:*
Magn. Feldstärke bei 1 A:	52,5 A/m	*Magnetic Field Strength, 1 A:*
Wirkwiderstand (Spulenpaar):	3.3 Ω	*Resistance (Coil pair):*
Induktivität (Spulenpaar):	21.3 mH (Coil Dist. 0.68 m)	*Inductance (Coil pair):*

Technische Daten:	**Outer Coil (Z-Axis)**	***Specifications:***
Effektive Spulenabmessungen:	1.32 m x 1.32 m	*Effective Coil Dimensions:*
Spulenabstand gem. EN 55103:	74 cm	*Coil Separation acc. EN 55103:*
Magn. Feldstärke bei 1 A:	48.2 A/m	*Magnetic Field Strength, 1 A:*
Wirkwiderstand (Spulenpaar):	3.6 Ω	*Resistance (Coil pair):*
Induktivität (Spulenpaar):	23.58 mH (Coil Dist. 0.74 m)	*Inductance (Coil pair):*



Center Coil X-Axis Effective Coil Dimension: 1.21 m x 1.21 m Coil Separation: 0.68 m Coil Current: 1 A						
Abst	H1[A/m]	H2[A/m]	Hges[A/m]	H1[dBµA/m]	H2[dBµA/m]	Hges[dBµA/m]
-0.34	12.8684	37.2031	50.0715	142.19	151.41	153.99
-0.33	13.1561	37.1904	50.3465	142.38	151.41	154.04
-0.32	13.4503	37.1524	50.6027	142.57	151.40	154.08
-0.31	13.7511	37.0891	50.8402	142.77	151.38	154.12
-0.30	14.0586	37.0008	51.0594	142.96	151.36	154.16
-0.29	14.3728	36.8878	51.2606	143.15	151.34	154.20
-0.28	14.6938	36.7505	51.4443	143.34	151.31	154.23
-0.27	15.0216	36.5894	51.6110	143.53	151.27	154.25
-0.26	15.3563	36.4050	51.7614	143.73	151.22	154.28
-0.25	15.6980	36.1980	51.8960	143.92	151.17	154.30
-0.24	16.0466	35.9689	52.0155	144.11	151.12	154.32
-0.23	16.4022	35.7187	52.1209	144.30	151.06	154.34
-0.22	16.7648	35.4480	52.2128	144.49	150.99	154.36
-0.21	17.1343	35.1577	52.2921	144.68	150.92	154.37
-0.20	17.5108	34.8488	52.3596	144.87	150.84	154.38
-0.19	17.8942	34.5221	52.4164	145.05	150.76	154.39
-0.18	18.2845	34.1787	52.4632	145.24	150.68	154.40
-0.17	18.6815	33.8196	52.5010	145.43	150.58	154.40
-0.16	19.0851	33.4457	52.5308	145.61	150.49	154.41
-0.15	19.4954	33.0580	52.5534	145.80	150.39	154.41
-0.14	19.9120	32.6577	52.5697	145.98	150.28	154.41
-0.13	20.3349	32.2457	52.5806	146.16	150.17	154.42
-0.12	20.7639	31.8231	52.5870	146.35	150.05	154.42
-0.11	21.1987	31.3909	52.5896	146.53	149.94	154.42

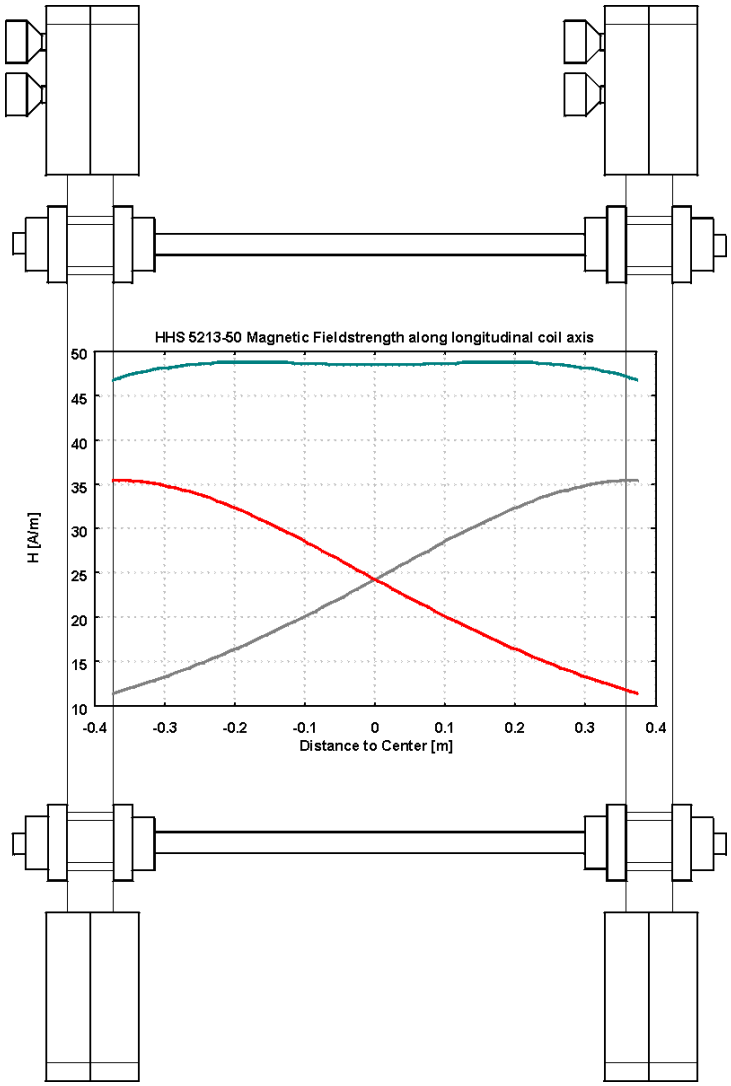
Center Coil X-Axis Effective Coil Dimension: 1.21 m x 1.21 m Coil Separation: 0.68 m Coil Current: 1 A						
Abst	H1[A/m]	H2[A/m]	Hges[A/m]	H1[dBµA/m]	H2[dBµA/m]	Hges[dBµA/m]
-0.10	21.6392	30.9501	52.5892	146.70	149.81	154.42
-0.09	22.0849	30.5017	52.5866	146.88	149.69	154.42
-0.08	22.5357	30.0467	52.5824	147.06	149.56	154.42
-0.07	22.9911	29.5860	52.5771	147.23	149.42	154.42
-0.06	23.4509	29.1205	52.5714	147.40	149.28	154.41
-0.05	23.9146	28.6512	52.5658	147.57	149.14	154.41
-0.04	24.3818	28.1788	52.5606	147.74	149.00	154.41
-0.03	24.8519	27.7043	52.5562	147.91	148.85	154.41
-0.02	25.3246	27.2283	52.5529	148.07	148.70	154.41
-0.01	25.7991	26.7517	52.5508	148.23	148.55	154.41
0.00	26.2750	26.2750	52.5501	148.39	148.39	154.41
0.01	26.7517	25.7991	52.5508	148.55	148.23	154.41
0.02	27.2283	25.3246	52.5529	148.70	148.07	154.41
0.03	27.7043	24.8519	52.5562	148.85	147.91	154.41
0.04	28.1788	24.3818	52.5606	149.00	147.74	154.41
0.05	28.6512	23.9146	52.5658	149.14	147.57	154.41
0.06	29.1205	23.4509	52.5714	149.28	147.40	154.41
0.07	29.5860	22.9911	52.5771	149.42	147.23	154.42
0.08	30.0467	22.5357	52.5824	149.56	147.06	154.42
0.09	30.5017	22.0849	52.5866	149.69	146.88	154.42
0.10	30.9501	21.6392	52.5892	149.81	146.70	154.42
0.11	31.3909	21.1987	52.5896	149.94	146.53	154.42
0.12	31.8231	20.7639	52.5870	150.05	146.35	154.42
0.13	32.2457	20.3350	52.5806	150.17	146.16	154.42
0.14	32.6577	19.9120	52.5697	150.28	145.98	154.41
0.15	33.0580	19.4954	52.5534	150.39	145.80	154.41
0.16	33.4456	19.0852	52.5308	150.49	145.61	154.41
0.17	33.8196	18.6815	52.5010	150.58	145.43	154.40
0.18	34.1787	18.2845	52.4632	150.68	145.24	154.40
0.19	34.5221	17.8942	52.4164	150.76	145.05	154.39
0.20	34.8488	17.5108	52.3596	150.84	144.87	154.38
0.21	35.1577	17.1343	52.2921	150.92	144.68	154.37
0.22	35.4480	16.7648	52.2128	150.99	144.49	154.36
0.23	35.7187	16.4022	52.1209	151.06	144.30	154.34
0.24	35.9689	16.0466	52.0155	151.12	144.11	154.32
0.25	36.1980	15.6980	51.8960	151.17	143.92	154.30
0.26	36.4050	15.3563	51.7614	151.22	143.73	154.28
0.27	36.5894	15.0216	51.6110	151.27	143.53	154.25
0.28	36.7505	14.6938	51.4443	151.31	143.34	154.23
0.29	36.8878	14.3728	51.2606	151.34	143.15	154.20
0.30	37.0008	14.0586	51.0594	151.36	142.96	154.16
0.31	37.0891	13.7511	50.8402	151.38	142.77	154.12
0.32	37.1524	13.4503	50.6027	151.40	142.57	154.08
0.33	37.1904	13.1561	50.3465	151.41	142.38	154.04
0.34	37.2031	12.8684	50.0715	151.41	142.19	153.99

Inner Coil (Y-Axis) Effective Coil Dimension: 1.10 m x 1.10 m Coil Separation: 0.62 m Coil Current: 1 A						
Abst	H1[A/m]	H2[A/m]	Hges[A/m]	H1[dBµA/m]	H2[dBµA/m]	Hges[dBµA/m]
-0.31	14.0928	40.9235	55.0162	142.98	152.24	154.81
-0.30	14.4397	40.9066	55.3463	143.19	152.24	154.86
-0.29	14.7954	40.8559	55.6513	143.40	152.23	154.91
-0.28	15.1597	40.7717	55.9315	143.61	152.21	154.95
-0.27	15.5330	40.6544	56.1874	143.83	152.18	154.99
-0.26	15.9152	40.5044	56.4196	144.04	152.15	155.03
-0.25	16.3065	40.3224	56.6289	144.25	152.11	155.06
-0.24	16.7069	40.1090	56.8160	144.46	152.06	155.09
-0.23	17.1166	39.8653	56.9818	144.67	152.01	155.11
-0.22	17.5354	39.5921	57.1275	144.88	151.95	155.14
-0.21	17.9636	39.2905	57.2541	145.09	151.89	155.16
-0.20	18.4010	38.9618	57.3628	145.30	151.81	155.17
-0.19	18.8478	38.6071	57.4549	145.51	151.73	155.19
-0.18	19.3037	38.2279	57.5316	145.71	151.65	155.20
-0.17	19.7689	37.8254	57.5943	145.92	151.56	155.21
-0.16	20.2431	37.4012	57.6443	146.13	151.46	155.22
-0.15	20.7264	36.9566	57.6830	146.33	151.35	155.22
-0.14	21.2184	36.4932	57.7116	146.53	151.24	155.23
-0.13	21.7191	36.0126	57.7317	146.74	151.13	155.23
-0.12	22.2282	35.5161	57.7443	146.94	151.01	155.23
-0.11	22.7454	35.0054	57.7508	147.14	150.88	155.23
-0.10	23.2705	34.4819	57.7524	147.34	150.75	155.23
-0.09	23.8031	33.9471	57.7502	147.53	150.62	155.23
-0.08	24.3427	33.4024	57.7452	147.73	150.48	155.23
-0.07	24.8890	32.8493	57.7384	147.92	150.33	155.23
-0.06	25.4415	32.2892	57.7307	148.11	150.18	155.23
-0.05	25.9995	31.7233	57.7228	148.30	150.03	155.23
-0.04	26.5626	31.1529	57.7155	148.49	149.87	155.23
-0.03	27.1299	30.5793	57.7092	148.67	149.71	155.22
-0.02	27.7008	30.0035	57.7043	148.85	149.54	155.22
-0.01	28.2745	29.4268	57.7013	149.03	149.37	155.22
0.00	28.8502	28.8502	57.7003	149.20	149.20	155.22
0.01	29.4268	28.2745	57.7013	149.37	149.03	155.22
0.02	30.0035	27.7008	57.7043	149.54	148.85	155.22
0.03	30.5793	27.1299	57.7092	149.71	148.67	155.22
0.04	31.1529	26.5626	57.7154	149.87	148.49	155.23
0.05	31.7233	25.9995	57.7228	150.03	148.30	155.23
0.06	32.2892	25.4415	57.7307	150.18	148.11	155.23
0.07	32.8493	24.8890	57.7384	150.33	147.92	155.23
0.08	33.4024	24.3427	57.7452	150.48	147.73	155.23
0.09	33.9471	23.8031	57.7501	150.62	147.53	155.23
0.10	34.4819	23.2705	57.7524	150.75	147.34	155.23
0.11	35.0054	22.7454	57.7508	150.88	147.14	155.23
0.12	35.5161	22.2282	57.7443	151.01	146.94	155.23
0.13	36.0126	21.7191	57.7317	151.13	146.74	155.23
0.14	36.4932	21.2184	57.7117	151.24	146.53	155.23
0.15	36.9566	20.7264	57.6830	151.35	146.33	155.22
0.16	37.4012	20.2431	57.6443	151.46	146.13	155.22
0.17	37.8254	19.7689	57.5943	151.56	145.92	155.21
0.18	38.2279	19.3037	57.5316	151.65	145.71	155.20
0.19	38.6071	18.8478	57.4549	151.73	145.51	155.19

Inner Coil (Y-Axis) Effective Coil Dimension: 1.10 m x 1.10 m Coil Separation: 0.62 m Coil Current: 1 A						
Abst	H1[A/m]	H2[A/m]	Hges[A/m]	H1[dBµA/m]	H2[dBµA/m]	Hges[dBµA/m]
0.20	38.9618	18.4010	57.3628	151.81	145.30	155.17
0.21	39.2905	17.9636	57.2541	151.89	145.09	155.16
0.22	39.5921	17.5354	57.1275	151.95	144.88	155.14
0.23	39.8653	17.1166	56.9818	152.01	144.67	155.11
0.24	40.1090	16.7069	56.8160	152.06	144.46	155.09
0.25	40.3224	16.3065	56.6289	152.11	144.25	155.06
0.26	40.5044	15.9152	56.4196	152.15	144.04	155.03
0.27	40.6544	15.5330	56.1874	152.18	143.83	154.99
0.28	40.7717	15.1598	55.9315	152.21	143.61	154.95
0.29	40.8559	14.7954	55.6513	152.23	143.40	154.91
0.30	40.9066	14.4397	55.3463	152.24	143.19	154.86
0.31	40.9235	14.0928	55.0162	152.24	142.98	154.81

Outer Coil (Z-Axis) Effective Coil Dimension: 1.32 m x 1.32 m Coil Separation: 0.74 m Coil Current: 1 A						
Abst	H1[A/m]	H2[A/m]	Hges[A/m]	H1[dBµA/m]	H2[dBµA/m]	Hges[dBµA/m]
-0.37	11.8396	34.1029	45.9424	141.47	150.66	153.24
-0.36	12.0820	34.0931	46.1751	141.64	150.65	153.29
-0.35	12.3295	34.0638	46.3932	141.82	150.65	153.33
-0.34	12.5820	34.0150	46.5970	141.99	150.63	153.37
-0.33	12.8397	33.9469	46.7866	142.17	150.62	153.40
-0.32	13.1025	33.8597	46.9622	142.35	150.59	153.43
-0.31	13.3705	33.7537	47.1242	142.52	150.57	153.46
-0.30	13.6438	33.6291	47.2729	142.70	150.53	153.49
-0.29	13.9224	33.4863	47.4088	142.87	150.50	153.52
-0.28	14.2064	33.3257	47.5321	143.05	150.46	153.54
-0.27	14.4956	33.1479	47.6435	143.22	150.41	153.56
-0.26	14.7903	32.9531	47.7434	143.40	150.36	153.58
-0.25	15.0903	32.7421	47.8324	143.57	150.30	153.59
-0.24	15.3957	32.5153	47.9111	143.75	150.24	153.61
-0.23	15.7065	32.2735	47.9799	143.92	150.18	153.62
-0.22	16.0226	32.0171	48.0397	144.09	150.11	153.63
-0.21	16.3440	31.7469	48.0909	144.27	150.03	153.64
-0.20	16.6707	31.4635	48.1342	144.44	149.96	153.65
-0.19	17.0027	31.1676	48.1703	144.61	149.87	153.66
-0.18	17.3398	30.8600	48.1998	144.78	149.79	153.66
-0.17	17.6820	30.5414	48.2234	144.95	149.70	153.67
-0.16	18.0292	30.2125	48.2417	145.12	149.60	153.67
-0.15	18.3813	29.8740	48.2553	145.29	149.51	153.67
-0.14	18.7382	29.5266	48.2648	145.45	149.40	153.67
-0.13	19.0997	29.1712	48.2708	145.62	149.30	153.67
-0.12	19.4656	28.8083	48.2739	145.79	149.19	153.67
-0.11	19.8359	28.4388	48.2747	145.95	149.08	153.67
-0.10	20.2103	28.0632	48.2735	146.11	148.96	153.67
-0.09	20.5885	27.6824	48.2710	146.27	148.84	153.67
-0.08	20.9704	27.2970	48.2675	146.43	148.72	153.67
-0.07	21.3558	26.9076	48.2634	146.59	148.60	153.67
-0.06	21.7442	26.5149	48.2591	146.75	148.47	153.67
-0.05	22.1355	26.1195	48.2550	146.90	148.34	153.67

Outer Coil (Z-Axis) Effective Coil Dimension: 1.32 m x 1.32 m Coil Separation: 0.74 m Coil Current: 1 A						
Abst	H1[A/m]	H2[A/m]	Hges[A/m]	H1[dBµA/m]	H2[dBµA/m]	Hges[dBµA/m]
-0.04	22.5292	25.7220	48.2512	147.05	148.21	153.67
-0.03	22.9251	25.3229	48.2481	147.21	148.07	153.67
-0.02	23.3228	24.9229	48.2457	147.36	147.93	153.67
-0.01	23.7218	24.5224	48.2442	147.50	147.79	153.67
0.00	24.1218	24.1219	48.2437	147.65	147.65	153.67
0.01	24.5223	23.7219	48.2442	147.79	147.50	153.67
0.02	24.9229	23.3228	48.2457	147.93	147.36	153.67
0.03	25.3229	22.9251	48.2481	148.07	147.21	153.67
0.04	25.7220	22.5292	48.2512	148.21	147.05	153.67
0.05	26.1195	22.1355	48.2550	148.34	146.90	153.67
0.06	26.5149	21.7442	48.2591	148.47	146.75	153.67
0.07	26.9076	21.3558	48.2634	148.60	146.59	153.67
0.08	27.2970	20.9704	48.2675	148.72	146.43	153.67
0.09	27.6824	20.5885	48.2710	148.84	146.27	153.67
0.10	28.0632	20.2103	48.2735	148.96	146.11	153.67
0.11	28.4388	19.8359	48.2747	149.08	145.95	153.67
0.12	28.8083	19.4656	48.2739	149.19	145.79	153.67
0.13	29.1712	19.0997	48.2708	149.30	145.62	153.67
0.14	29.5266	18.7382	48.2648	149.40	145.45	153.67
0.15	29.8740	18.3813	48.2553	149.51	145.29	153.67
0.16	30.2125	18.0292	48.2417	149.60	145.12	153.67
0.17	30.5414	17.6820	48.2234	149.70	144.95	153.67
0.18	30.8600	17.3398	48.1998	149.79	144.78	153.66
0.19	31.1676	17.0027	48.1703	149.87	144.61	153.66
0.20	31.4635	16.6707	48.1342	149.96	144.44	153.65
0.21	31.7469	16.3440	48.0909	150.03	144.27	153.64
0.22	32.0171	16.0226	48.0397	150.11	144.09	153.63
0.23	32.2735	15.7065	47.9799	150.18	143.92	153.62
0.24	32.5153	15.3957	47.9111	150.24	143.75	153.61
0.25	32.7421	15.0903	47.8324	150.30	143.57	153.59
0.26	32.9531	14.7903	47.7434	150.36	143.40	153.58
0.27	33.1479	14.4957	47.6435	150.41	143.22	153.56
0.28	33.3257	14.2064	47.5321	150.46	143.05	153.54
0.29	33.4863	13.9224	47.4088	150.50	142.87	153.52
0.30	33.6291	13.6438	47.2729	150.53	142.70	153.49
0.31	33.7537	13.3705	47.1242	150.57	142.52	153.46
0.32	33.8597	13.1025	46.9622	150.59	142.35	153.43
0.33	33.9469	12.8397	46.7866	150.62	142.17	153.40
0.34	34.0150	12.5820	46.5970	150.63	141.99	153.37
0.35	34.0638	12.3295	46.3933	150.65	141.82	153.33
0.36	34.0931	12.0820	46.1751	150.65	141.64	153.29
0.37	34.1029	11.8396	45.9424	150.66	141.47	153.24



Helmholtzspulen und resultierender Feldstärkeverlauf in Achsrichtung grafisch dargestellt. Die Gesamtfeldstärke ergibt sich aus der Summe der beiden Einzelbeiträge der Spulen. Bei günstiger Abstandswahl (Abstand = 0.6 * Kantenlänge) läßt sich ein relativ großes Volumen mit homogenem Feldstärkeverlauf erreichen.

*Helmholtz Coils and resulting fieldstrength in direction of the rotational axis presented in a graph. The total fieldstrength between the coils is the sum of both contributions of each single coil. A uniform fieldstrength characteristic over a large volume can be achieved choosing the appropriate coil spacing (Coil spacing = 0.6 * sidelength).*

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