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MICHIGAN STATE UNIVERSITY
CYCLOTRON PROJECT*

Magnetic Field Measurements for the MSU Cyclotron

R. E. Berg, H. G. Blosser
and W. P. Johnson

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Department of Physics
East Lansing, Michigan

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I. Introduction

The magnet of the Michigan State University variable-energy, multi-particle cyclotron is of the three-sector quasi-Thomas type with special design features to minimize saturation effects[1]. Maximum energies for typical particles are: 55 MeV for protons, 28 MeV for deuterons, 75 MeV for $_{3}He^{2+}$, 56 MeV for alphas and 75 MeV for $_{12}C^{4+}$.

This report presents results of an extensive series of magnetic field measurements performed on the full scale magnet, including effects of trimming coils. Field data were taken on the main magnet field (without trimming coils) at seven excitations, individually on each of eight pairs of circular trimming coils at four main field excitations, and on one set of first harmonic coils at two main field excitations. Using processing methods described herein, these data have been reduced to a single card deck containing all of the field information; this "master" field deck is used as a general, standard input for a series of computer programs[2] which calculate cyclotron operating parameters and orbit characteristics. To use these programs with the master field deck the user has only to specify the particle and energy of interest— the proper magnetic field is then automatically assembled by interpolation (including interpolation in both main fields and trim coil fields), which is an extremely convenient arrangement.

II. Measurement Procedures

The field data presented herein were taken with a thermoelectrically cooled Hall probe[3], whose accuracy under optimum conditions is better than 5 parts in 10^5. A voltage proportional to the Hall plate output current was digitized using a voltage-to-frequency converter and frequency counter and the resulting quantities recorded on cards using an IBM Model 526 Punch. Random error in the complete sensing system was kept to less than 1 part in 10^4. The Hall plate field sensing system was calibrated at sixteen magnetic field levels by comparison to proton and deuteron NMR probes. Figure 1 shows the Hall voltage-to-kilogauss conversion factor as a function of field strength. A fourth-order polynomial, obtained from a least squares fit of this calibration data, was used to convert all data into field units.

Data were taken on a polar grid of points on the median plane at one inch radial intervals and four degree azimuthal intervals using a positioning device obtained from the University of Colorado[4]. The measurement procedure was semi-automatic—the azimuthal motion and positioning of the probe as well as the punch-out process were automatic, but it was necessary for the operator to set the radial probe position at the beginning of each azimuthal scan. In addition, regular checks on field stability, using the NMR probe, and on the Hall voltage and temperature were performed between successive azimuthal scans.

Figure 2 shows the orientation of the measurement grid relative to the magnet yoke, pole tips, and dee structure. The zero degree position was taken to be the center line of the dees, with the direction of increasing azimuth that of the circulation of the beam—counterclockwise when viewed from above.

The design of the positioning device is such that a given turn must always be followed by an opposite unwinding turn. The drive mechanism provided for only one speed and the rewinding rotation took 2/3 as long as the forward measuring rotation. To eliminate the substantial time delay involved in rewinding, data were taken on both forward and return rotations. This, of course, introduces a systematic error in the azimuthal positioning of the probe as a result of backlash in the gear system. The magnitude of this error was carefully calibrated by making a series of successive positive and negative azimuthal scans at the same radius and Fourier analyzing the data to obtain the amplitude and phase of the harmonics:

$$B(\theta) = \bar{B} + \sum_{i=3,6,9} B_i \cos i(\theta - \delta_{nN}) .$$

The values of δ_i for each direction were averaged and compared, the difference being the backlash angle. A value $\theta_b = -0.112° \pm 0.005°$ was obtained—in all subsequent runs, this correction was introduced in the process of Fourier analyzing the data. The azimuthal position of the probe was controlled to within $\pm$ 0.005° for all runs.

III. Main Field Measurements

Complete measurements consisting of 360° azimuthal scans by 4° steps and 0" to 46" radius by 1" steps were performed at each of seven approximately equally-spaced main field excitations. These seven fields are labeled, beginning with the lowest, as field 100, 150, 200, 250, 300, 350, and 400. Each field also includes the reading of the deuteron NMR probe at the center of a hill (where the variation of field with position is smallest); this reading is used as a reference point and also gives a means of precisely reproducing the main field excitation level when desired. The magnet excitation and deuteron NMR data for each run are shown in Table I.

The field data for each radius were reduced by Fourier analysis[5] to a set of nine coefficients giving amplitude and phase of the zeroth, first, third, sixth and ninth Fourier components (and also alternate expressions as amplitudes of sine and cosine Fourier components).

The coefficients are obtained from the measured data by evaluation of the appropriate sums, e.g.,

$$B_o(r) = \frac{1}{96} \sum_{n=0}^{95} B(r, n\Delta\theta)$$

$$G_i(r) = \frac{1}{48} \sum_{n=0}^{95} B(r,n\Delta\theta)\sin(in\Delta\theta)$$

$$H_i(r) = \frac{1}{48} \sum_{n=0}^{95} B(r,n\Delta\theta)\cos(in\Delta\theta)$$

$$B_i(r) = [(G_i(r))^2 + (H_i(r))^2]^{1/2} \tag{1}$$

$$\delta_i(r) = \mathrm{Tan}^{-1}(G_i(r)/H_i(r)) \ .$$

For data taken in the positive θ direction, the δ_i are corrected for the known backlash to give a corrected phase δ_i^*; corrected $G_i(r)$ and $H_i(r)$ are computed by evaluating $B_i(r)\sin\delta_i^*(r)$ and $B_i(r)\cos\delta_i^*(r)$, respectively. In following orbit programs using these coefficients, the "effective" field is evaluated when needed from the sum

$$B(r,\theta) = B_o(r) + \sum_{i=3,6,9} (G_i(r)\sin(i\theta) + H_i(r)\cos(i\theta)) \ . \tag{2}$$

The Fourier coefficient representation of the field has the advantage of (a) giving a ten-fold reduction in the number of quantities required to describe a particular field, (b) due to the averaging processes involved in Eqs. (1), random noise is reduced by a factor of approximately 10 as compared with the original data and (c) due to the analytical nature of the representation, azimuthal derivatives of the field are automatically well behaved.

The facts that (a) the magnet was designed to have three-fold symmetry in θ and (b) the radial focusing frequency is approximately unity, cause the selected nine coefficients to be dominant in the determination of orbit properties. As a check, for the highest field (field 400), coefficients for the second, twelfth, fifteenth and eighteenth harmonics were computed and are given in Table II. Since the fractional effect of the K<u>th</u> harmonic on the orbit radius is to good approximation given by $B_K/(K^2 - 1)B_o$, the twelfth, fifteenth and eighteenth harmonics are seen to give a radius change of less than 3 parts in 10^4 which is clearly negligible. The importance of the second harmonic is a considerably more subtle question. Following the procedures of Gordon and Hudec[6] it was also, however, found to be negligible.

The data handling was complicated by the fact that a decision was made to change the magnet center plug after a first complete set of main field measurements had been taken. Complete measurements for field 350 and 400 were performed with this new center plug in place. For fields 100, 200, and 300 measurements were made using the second center plug out to 15 inches, by which radius the effect of the change of center plug on the field is small. Fields 100, 150, 200, 250 and 300 outside 15 inches were, therefore, taken to be those at the same excitation with the first center plug, and were joined smoothly by scaling the field at the larger radii. Inside 15 inches average fields 150 and 250 were obtained by interpolation in the four lowest sets of smoothed average fields. Comparison of previously measured data to that computed in this manner indicated that such an interpolated field was accurate to within about two gauss. The harmonic fields were taken to be those obtained from the data using the first center plug, which procedure was found by comparison of measured data in other cases to be accurate to within a few gauss.

Unfortunately, after most of the data were taken, we discovered that the design of the radial positioning device permitted a quantized error in position to occur with appreciable probability. To avoid repeating measurements, the average field data were "smoothed" graphically by plotting ratios of the average fields of each run to those of the highest field, number 400, where for convenience the ratios were normalized to unity at 15 inches. Figure 3 shows such a plot containing ratios obtained for two sets of average field data. The greatly expanded scale of the ratio graphs permitted easy identification of the points where the radius error had occurred—the bars and X's in Fig. 3 show typical corrections. Errors in the base field at some radius, of course, give a bump in all six ratios and so are easily distinguishable. In total, 49 field points were corrected by this procedure, or an average of seven per run (each run gave 47 values of average field).

For the runs taken in two parts, as indicated previously, the values outside 15 inches were scaled to render the fields continuous across the break; Fig. 3 also shows the result of this scaling on run 100.

Smoothing of the flutter field components was deemed unnecessary on the basis of approximate calculations of the effect on particle motion of the known radius error.

The smoothed average fields $\langle B(r,\theta)\rangle$ are plotted as a function of radius for each of the seven main field excitations in Fig. 4. The amplitude $B_i(r)$ of the third, sixth and ninth harmonics are shown in Fig. 5. (For clarity sixth and ninth harmonics of several excitations have been left off the graph.) Tables III-IX give the smoothed average fields and the cosine and sine components of the third, sixth and ninth harmonics of the magnetic field, respectively, for each of the seven main field excitations.

The first harmonic field component was smoothed by a special procedure since (a) the amplitude of this harmonic was only slightly higher than the noise level in the data and (b) behavior of orbits near the $\nu_r = 1$ resonance depends very sensitively on the first harmonic and its derivatives. This was accomplished by fitting the cosine and sine components by a least squares fit of half periods of Legendre polynomials. Polynomials of up to tenth order were used in all fits to provide the necessary detail in fitting and to preserve continuity of the various functions through the full range of excitation. The resulting representation is given in Tables X and XI and is plotted in Fig. 6 along with the original data.

The random fluctuations in the measured first harmonic values are, of course, an excellent measure of the size of random errors in data—if the fitted curves are assumed to represent the actual first harmonic the rms deviation from the fitted curves is only 0.1 gauss, i.e., exceedingly accurate data!

The first harmonic rise at large radii is attributed to the asymmetry introduced into the main coils by the coil leads; the peak of the harmonic is at the azimuth of the leads and the amplitude is proportional to the coil current.

Figure 7 is a plot of median plane magnetic field contours for field 400. (The slight inward bend of the 18 kilogauss contour near $\theta = 80^{\circ}$ is introduced by the truncation of the Fourier series.)

IV. Optimum Average Fields

Using the "Policy" program[5], isochronous average fields corresponding to each excitation were calculated for five particles covering the range of e/m values to be handled by the cyclotron. Specifically, the e/m's corresponded to protons, $_3He^{2+}$ ions, deuterons, $_{12}C^{4+}$ ions and a "very heavy" ion (that is, a particle with no relativistic mass increase). One of the special features of the Policy program is that the calculated isochronous fields mesh smoothly with the measured field in the edge region so that the field correction which the trim coils must supply goes smoothly to zero near the extraction radius which substantially eases the current required in the heavily worked outer coils.

Specification of the optimum fields was complicated by the fact that the flutter fields for protons above 40 MeV final energy (fields 300, 340 and 400) were not of sufficient magnitude to provide adequate axial focusing in the isochronous field*. It was, therefore, necessary to "de-isochronize" these fields to a considerable extent in order to reduce the average field gradient to a level consistent with the flutter field[7]. The de-isochronizing, of course, introduces a phase excursion which must be carefully checked and held to an acceptable level. After some manipulation "ideal" fields at the 300, 350 and 370 level were obtained—these fields provide good axial focusing while producing only a small phase excursion.

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*The MSU cyclotron was originally designed as a 40 MeV machine; later improvements in the pole-tip design increased the effective radius leading to the present 55 MeV final energy. The flutter had, however, been frozen substantially earlier on the basis of a 40 MeV maximum energy.

These fields along with unadjusted Policy isochronous fields for all other cases constitute the complete set of "ideal" fields presented in Tables XII-IVIII.

For each of the ideal fields, the equilibrium orbit code was used to obtain focusing and orbital frequencies along with other useful data[8]. The axial focusing frequencies ν_z for three particles at four main field excitations are shown in Fig. 8. The cases chosen represent extreme and average behavior; all other cases lie inside these limits. (Note: The ν_z values below 5" were calculated in fields obtained from fitting the difference field between the ideal average field and the measured average field of the magnet between 5" and 28" by the measured average fields of the eight circular trimming coils, and thus reflect the enhanced axial focusing produced by the central field "cone".)

V. Trim Coil Measurements

A set of eight pairs of concentric circular coils provide the adjustment capability required for variable-energy multi-particle operation. Geometrical parameters of this coil set are given in Table XIX.

The effect of a given trimming coil is unfortunately strongly dependent on the excitation of the main magnet. The incremental effect of each coil was, therefore, measured at four different main magnet excitations; the effect at arbitrary main magnet excitation is then obtained by interpolation in the measured set. Since the trim coils in total contribute less than 3% of the magnetic field at any setting it was assumed that their effect on imperfection harmonics would be negligible; the azimuthal scan for the measurements was, therefore, shortened to one sector (120°). It was also deemed unnecessary to measure trimming coil fields at each radius, since the shape of such a field is known to be a relatively smooth function similar to that of an air-core coil. Therefore, measurements were performed at approximately half of the radius values, with denser measurements in regions of large gradient regions, such as directly under the coils, and fewer points elsewhere. At the unmeasured radii the coil effectiveness was obtained by radial interpolation in the measured values. As an example, the field of coil 5 was measured at radii 1, 5, 9, 13, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 32, 38 and 45 inches; other values were interpolated.

For the range of currents available the field of a trim coil was found to depend linearly on its own current to within the accuracy of the measurement, and so the effect of each coil was measured at only one current level —100 amperes—which is one-half of the power supply maximum. The field of each coil is also assumed to be independent of the current in other trim coils. The measured linearity of a single coil along with the small total trimming required, make this a reasonable assumption. No attempt was therefore made to measure the effect of combinations of trim coils.

The measurement procedure for the trim coil fields consisted of two successive measurement scans at each radius, with the trim coil off and on, respectively. The two sets of data points were first converted into field units and then subtracted, yielding the net field of the trim coil. A Fourier analysis of the trim coil field at each radius was performed, yielding the average field and main harmonics; the harmonics were, however, insignificant in comparison with those of the main field and have, therefore, been neglected in subsequent calculations.

Finally, the average fields of the trim coils were smoothed graphically by direct inspection of average field plots. A total of 18 corrections were made, or roughly one correction for two complete sets of trim coil average fields. The smoothed fields of the trim coils are presented in Tables XX-XXVII by trim coil number, and the fields are plotted in Fig. 9 and 10.

VI. Valley Coil Measurements

The MSU cyclotron has one set of "harmonic" coils, consisting of a 10 turn 12.5" diameter coil centered at a radius of 27" in each valley of the magnet. The function of this coil set is to cancel the existing first harmonic in the main magnet near the $\nu_r = 1$ resonance and to provide a controlled first harmonic for a resonant extraction system. Complete geometrical parameters for these coils are given in Table XIX.

When used in the cyclotron the harmonic coils are constrained to produce zero average field by means of a power supply connection which causes the algebraic sum of the currents to be zero. Since this power supply was unavailable at the time of the magnet measurements, the effect was synthesized by measuring the field of a single coil and then analytically summing to obtain the effect of the combination with the $\Sigma I_i = 0$ condition imposed.

The harmonic coil field was mesured at 12 radii which were sufficient to fix the detailed field shape (the measurement grid was, of course, dense in the vicinity of the coils and thin elsewhere); field data at other radii were found by interpolation. Since the primary function of the coils is to produce a first harmonic, 360° scans were necessary. As with the trim coils, coil-on and coil-off scans were made in immediate succession.

Data from the harmonic coil measurements were smoothed graphically in the same manner as described in Sec. IV for the trim coil average fields. The resulting first harmonic amplitude vs. radius is given in Table XVIII and graphed in Fig. 11. Since the function shows very little variation with main magnet excitation, it was measured at only two excitations.

VII. Master Field Deck

After processing, all field data was combined in a single card deck containing the following:

(1) Tables giving the function:

$\langle B(r,\theta)\rangle$, $H_1(r)$, $G_1(r)$, $H_3(r)$, $G_3(r)$, $H_6(r)$, $G_6(r)$, $H_9(r)$, $G_9(r)$ at each of seven main field excitations.

(2) Tables of ideal average fields of ${}_1H^+$, ${}_3H^{++}$, ${}_2H^+$, ${}_{12}C^{4+}$, and heavy ion, for each of the seven main field excitations.

(3) Tables of incremental trim coil effect $B(r,\theta)/100$ amps at each of four main field excitations for each of eight trim coils.

(4) Tables of valley coil first harmonic amplitude at two main field excitations.

Using this "master" field deck, other MSU computer programs obtain field data at arbitrary excitation levels by interpolations in the various field quantities. The use of one card deck for all fields provides an extremely convenient operating situation. Orbit properties for any cyclotron operating condition can be calculated without selection, sorting or other manipulation of data decks.

The MSU cyclotron has now been tested over a wide range of operating conditions[9] using control settings calculated from the field data herein described. In every case, beam has been accelerated to full radius without attenuation and with all controls set at the calculated values. The validity of the data herein described is thus directly evidenced.

Acknowledgements

The assistance of Jack Beal, Dave Johnson, Werner Joho, John Kopf and Julie Wescott in making magnet measurements, and Professor William P. Johnson for providing the Hall probe electronics is greatly appreciated.

References

1. H. G. Blosser, Proc. Int. Conf. on Sector-Focused Cyclotrons & Meson Factories, CERN (1963).
2. Two computer programs are now in use:
   (a) CYCLONE, traces orbits from the ion source through the deflector system using measured electric and magnetic fields.
   (b) SETOP, computes operating points for all particles over the entire energy range (see also R. E. Berg H. G. Blosser, and M. M. Gordon, "Control of the MSU Cyclotron," Proc. Int. Conf. on Sector-Focused Cyclotrons, Gatlinburg, Tennessee (May 2-5, 1955).
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8. T. I. Arnette, Mich. State Univ. Cyclotron Project Report, MSUCP-10 (1961).
9. H. G. Blosser and A. I. Galonsky, "The Michigan State University 55 MeV Cyclotron: Progress and Status,"

February, 1966. Proc. Int. Conf. on Sector-Focused Cyclotrons, Gatlinburg, Tennessee (May 2-5, 1966).

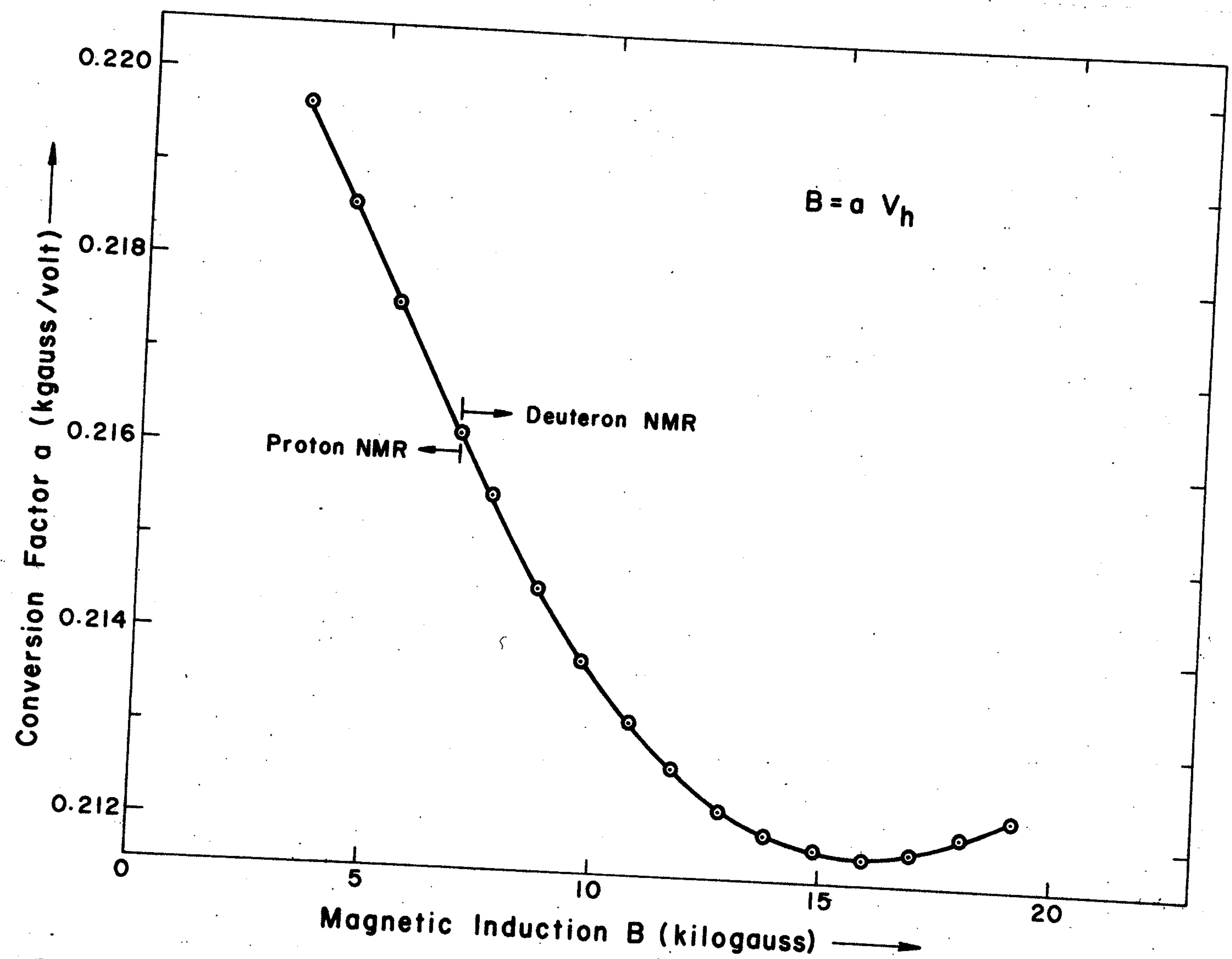

Figure 1. Hall voltage-to-kilogauss conversion factor for the thermoelectrically-cooled hall probe used in the MSU cyclotron magnetic field measurements.

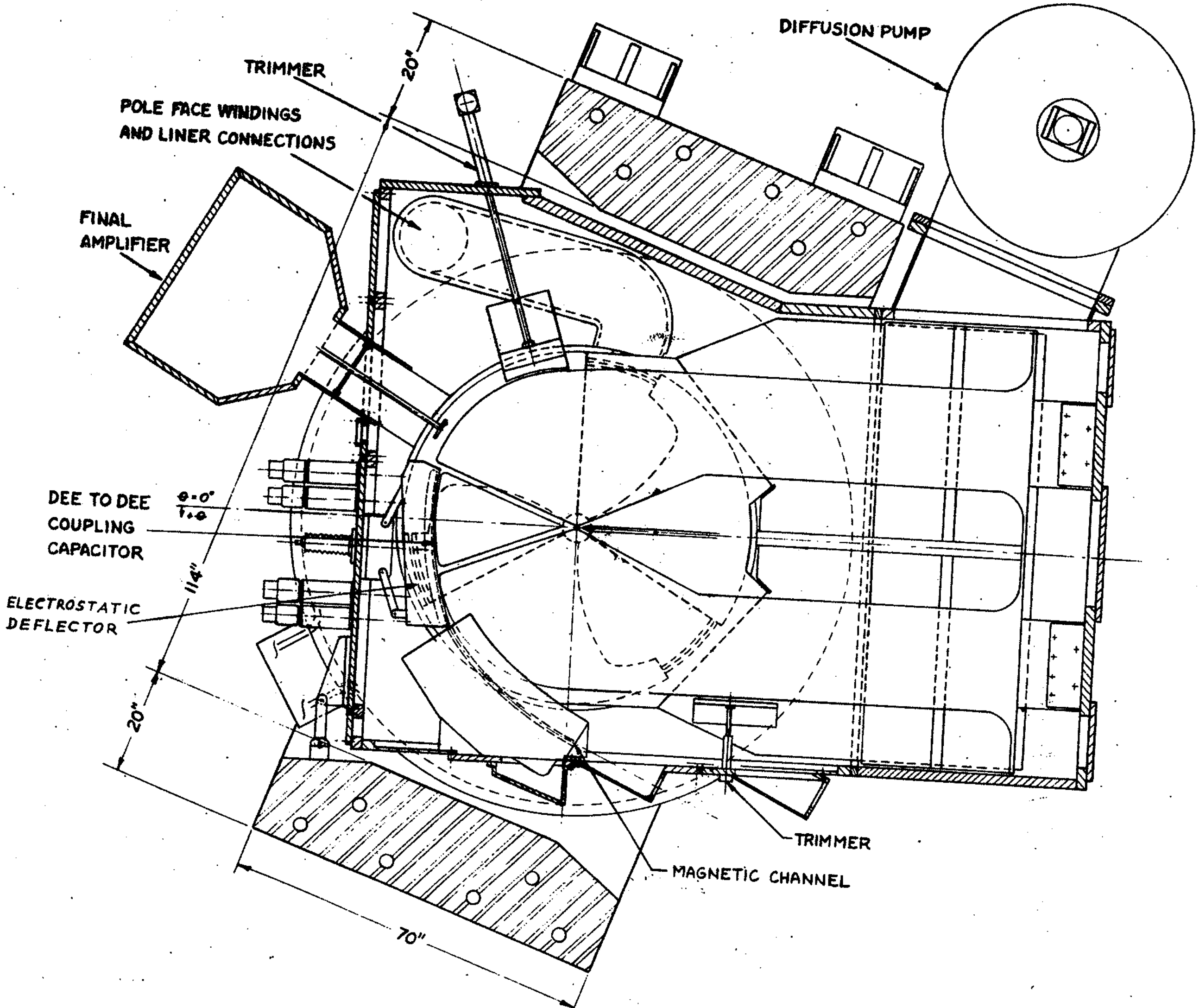

Figure 2. Cross-sectional view of the MSU cyclotron parallel to the median plane showing the positions of the major components with respect to the magnet yoke.

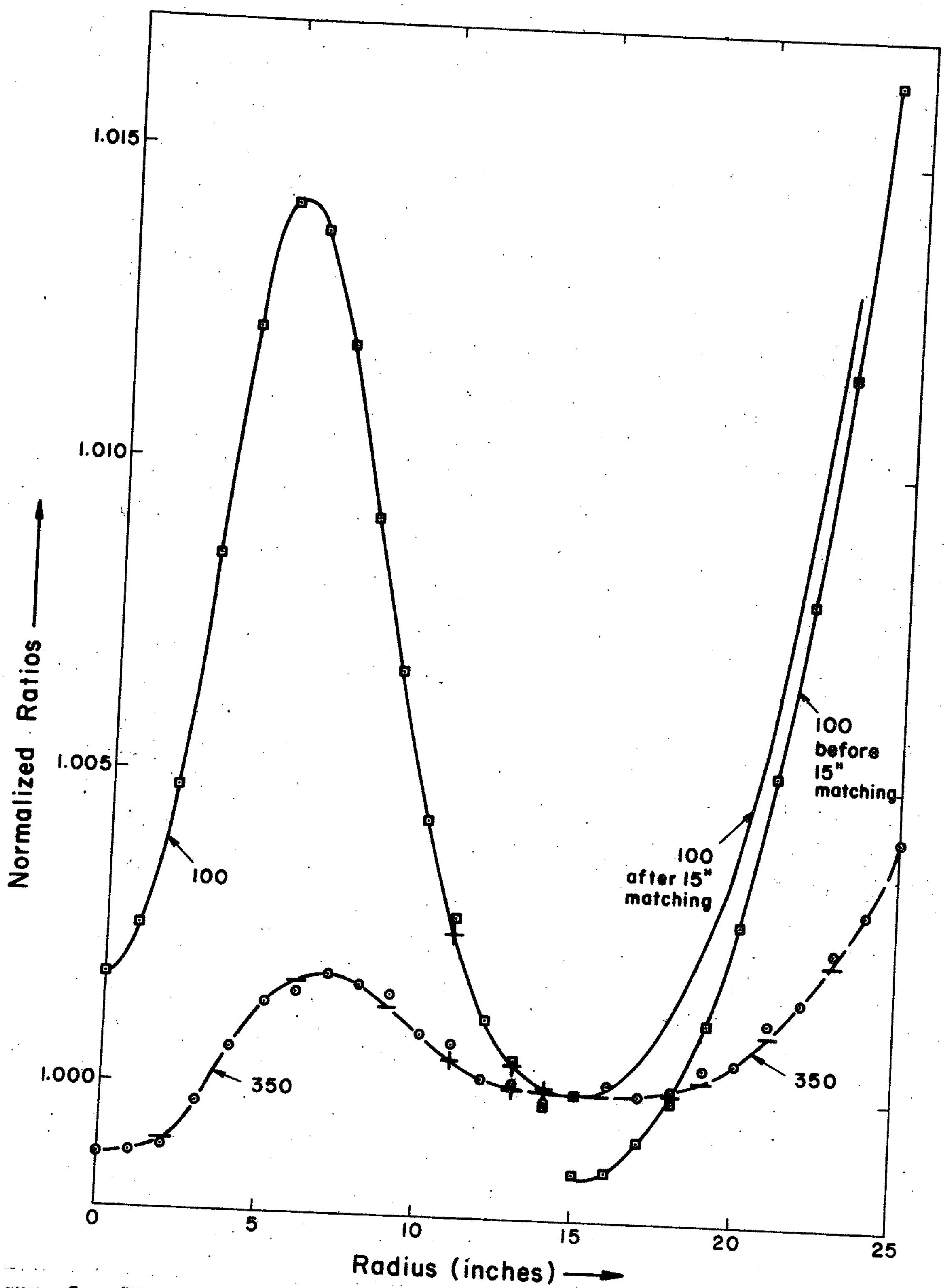

Figure 3. Plot of normalized average field ratios for fields 100 and 350. Graphs of this type were used to detect and correct average field errors produced by radial mispositioning of the Hall probe. Run 100 ratios at radii 15" to 46" are shown before and after the scale correction which matched the field from two sets of measurements.

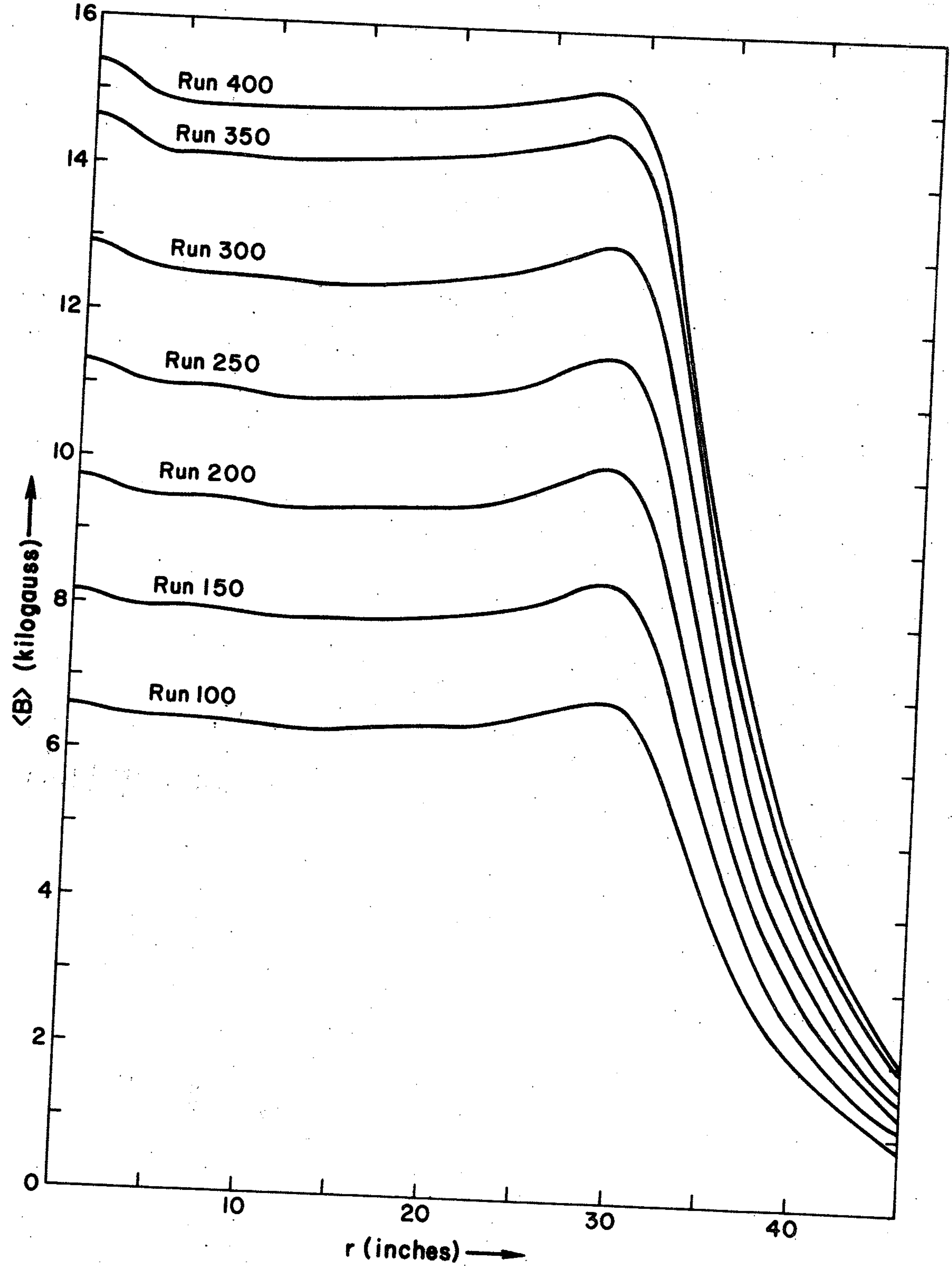

Figure 4. Azimuthal average of the magnetic field vs. radius for each measured excitation of the Michigan State University cyclotron.

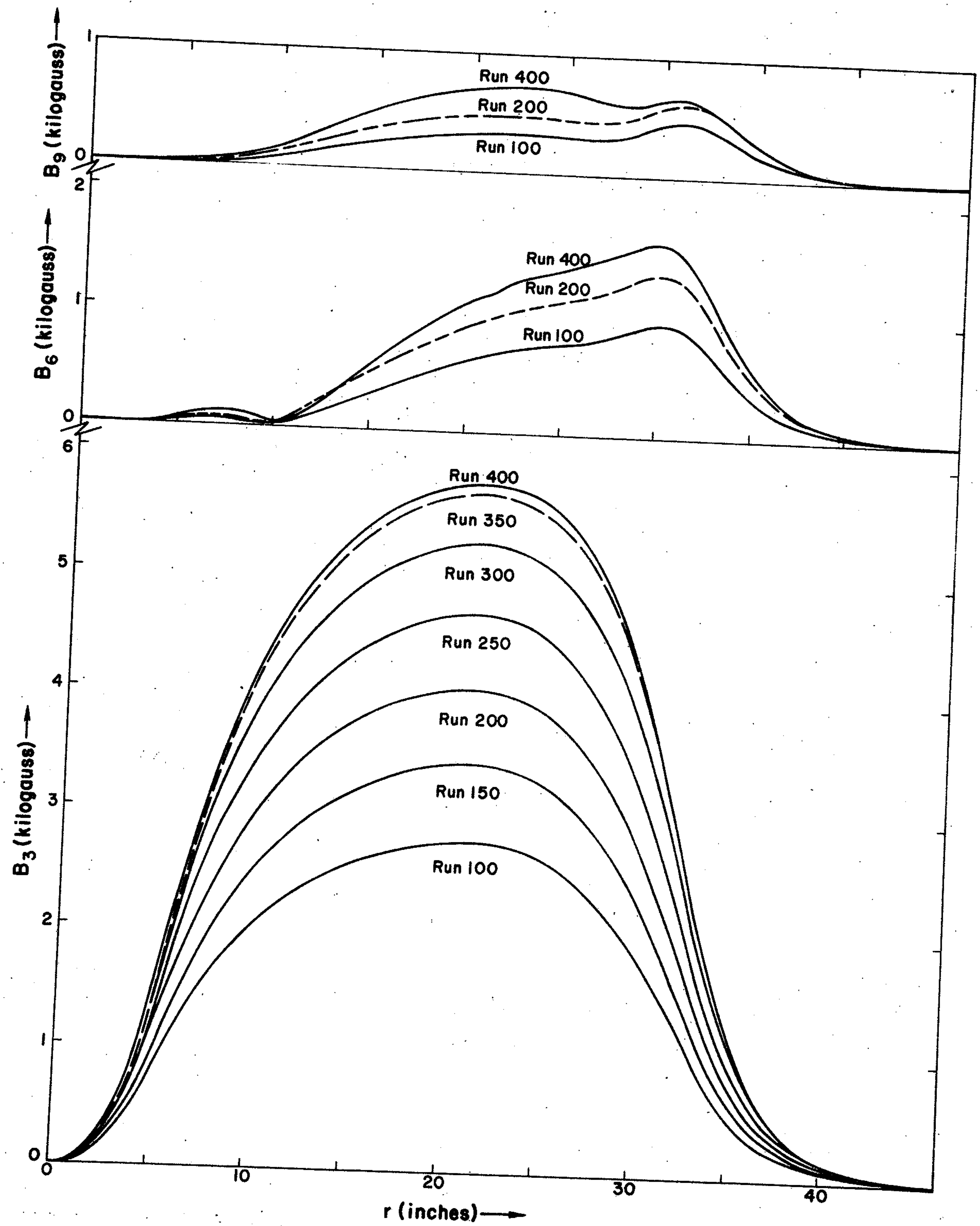

Figure 5. Amplitudes of the third, sixth and ninth field harmonics vs. radius for selected main field excitations of the Michigan State University cyclotron.

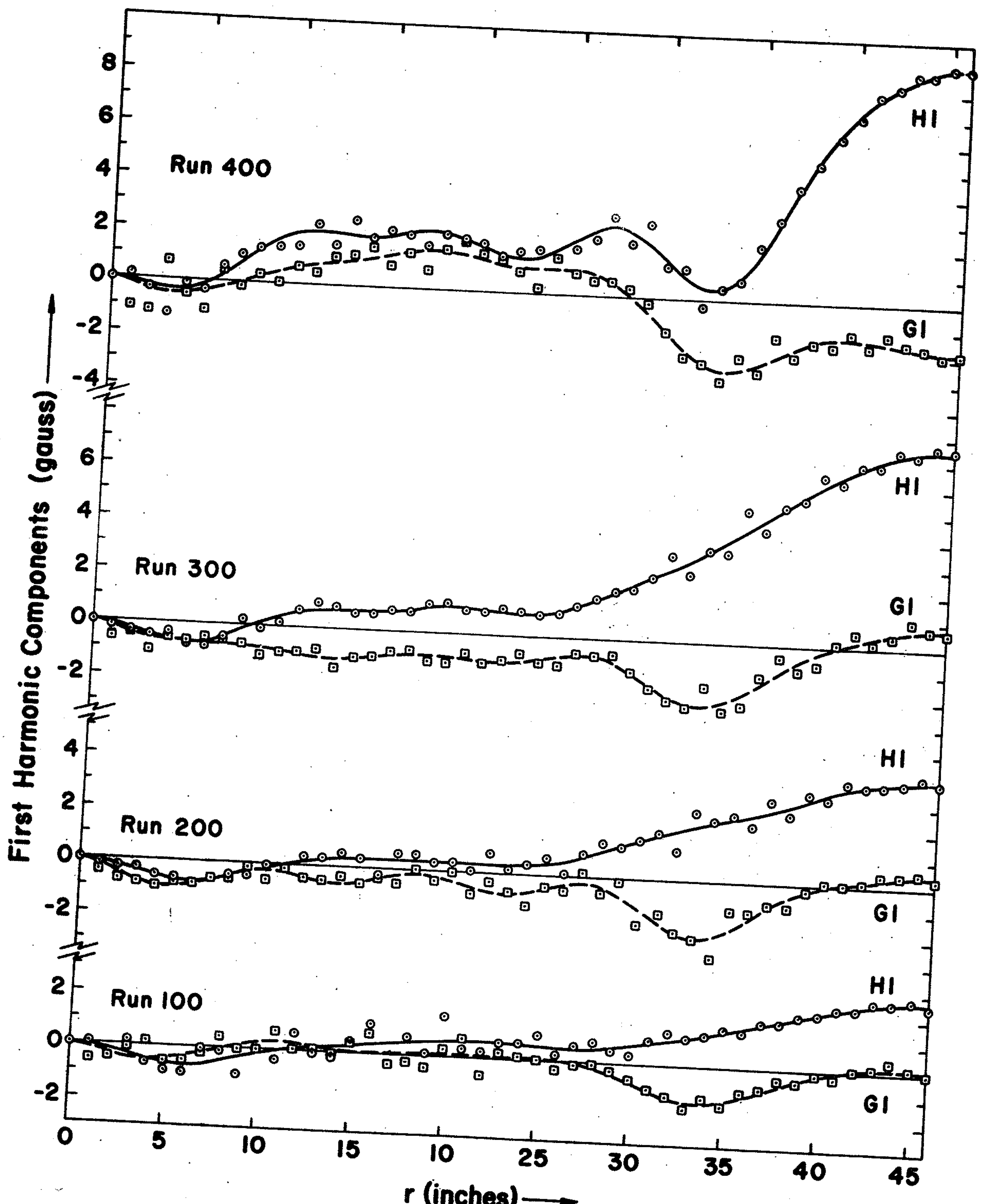

Figure 6. Magnetic field first harmonic sine and cosine Fourier components vs. radius for four main field excitations. Points show measured values; curves show result of smoothing computation. The large first harmonic at outer radii is due to main coil leads.

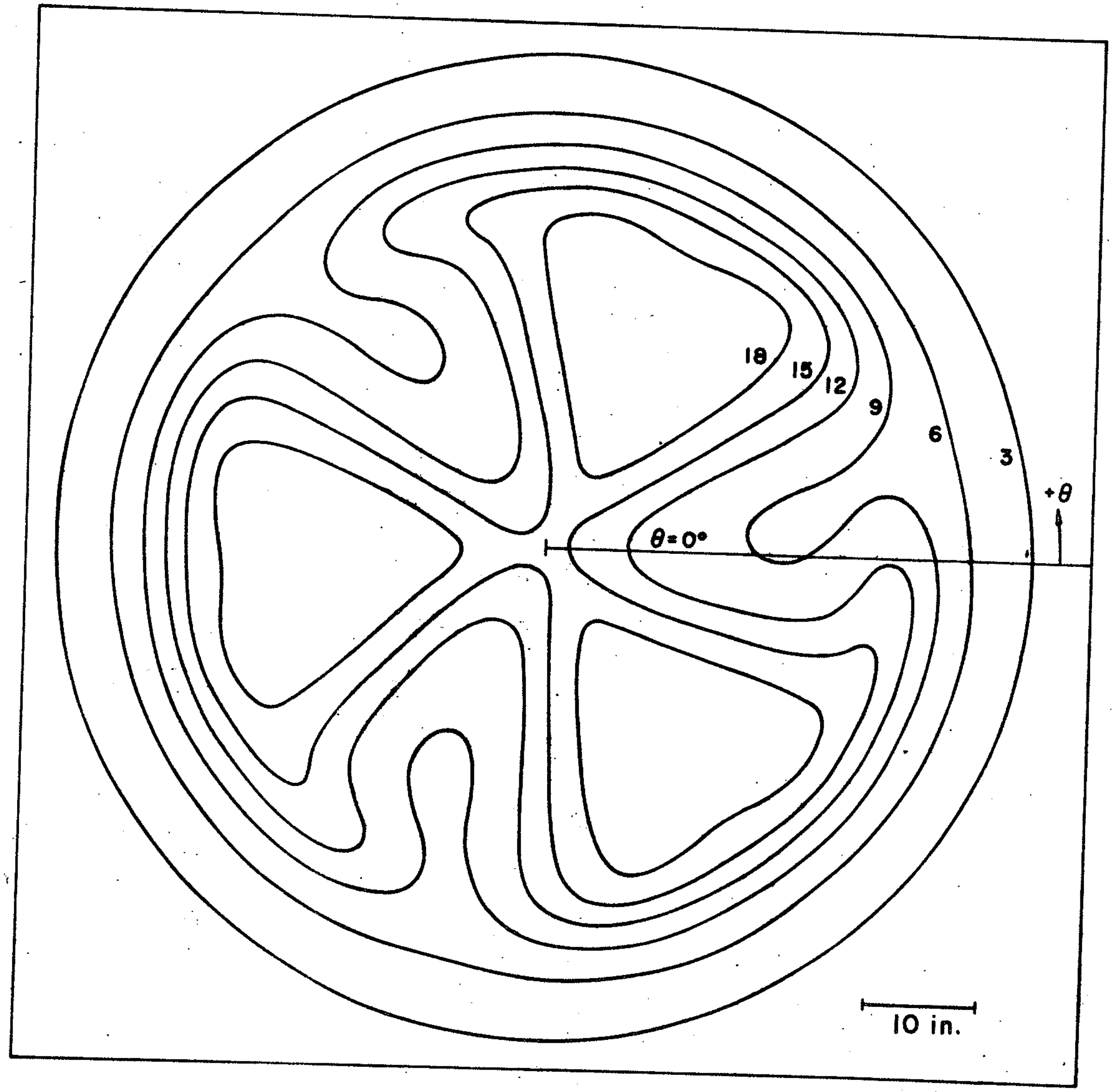

Figure 7. Contour map of equal magnetic field contours for the truncated Fourier representation of the highest main field excitation of the MSU cyclotron. Fields are in kilogauss.

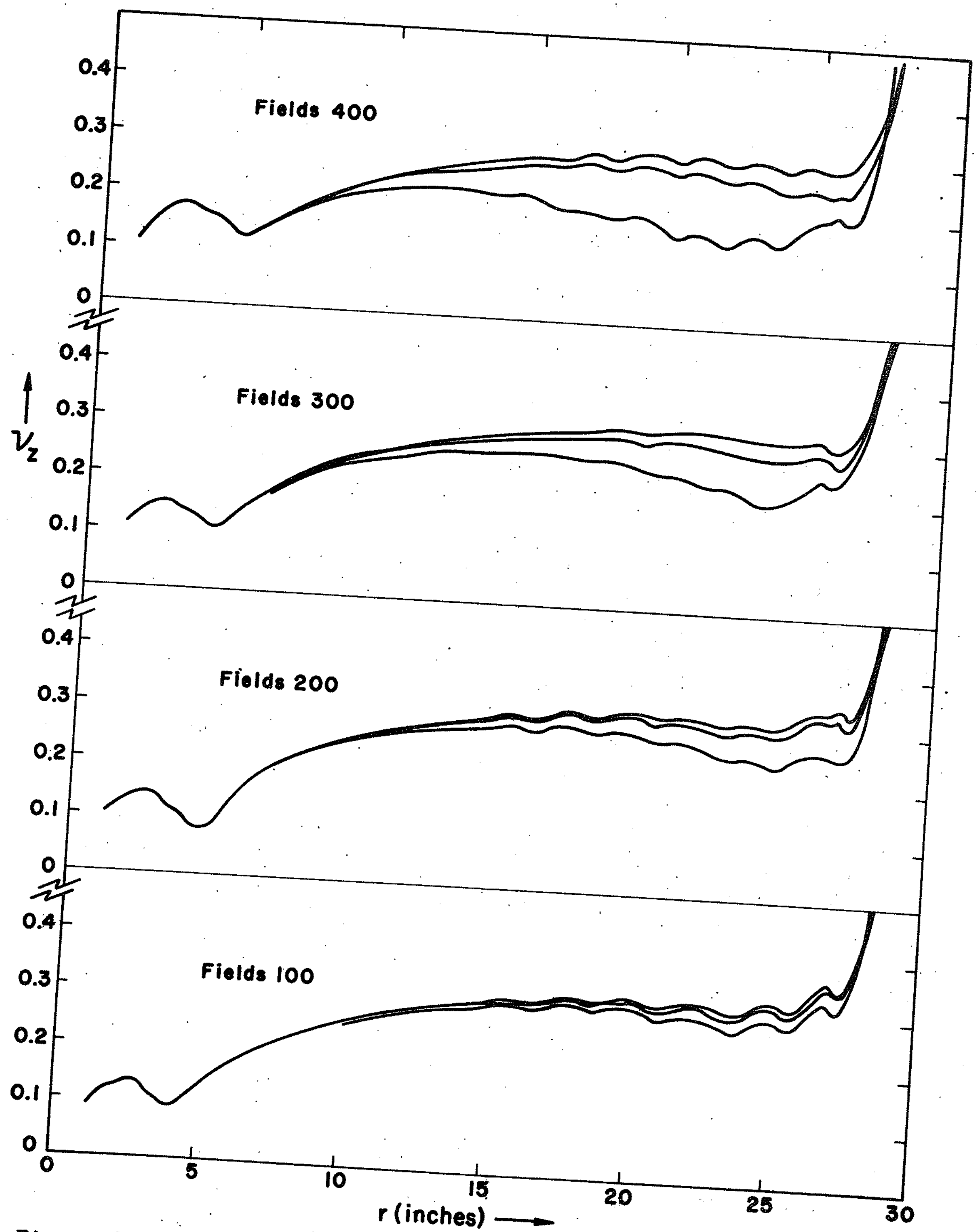

Figure 8. Calculated axial focusing frequency ν_z vs. average radius for the MSU cyclotron. Curves are shown for $_1H^{+1}$, $_2H^{+1}$, and a non-relativistic heavy ion for each of four main field excitations covering the entire range of the cyclotron.

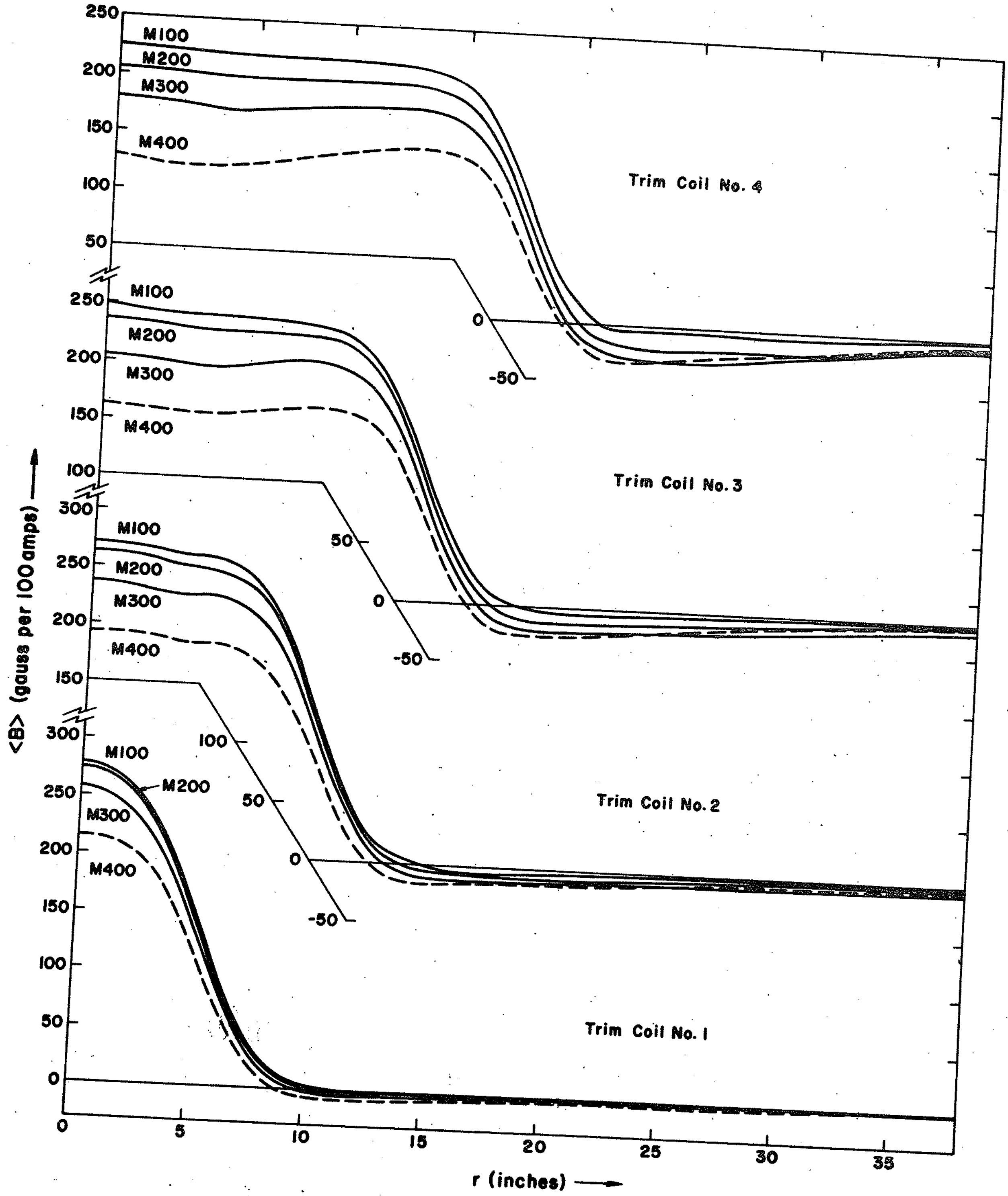

Figure 9. Average magnetic field vs. radius for trim coils 1-4 of the MSU cyclotron. Curves are shown for each trim coil for each of the four main field excitations at which the trim coil fields were measured.

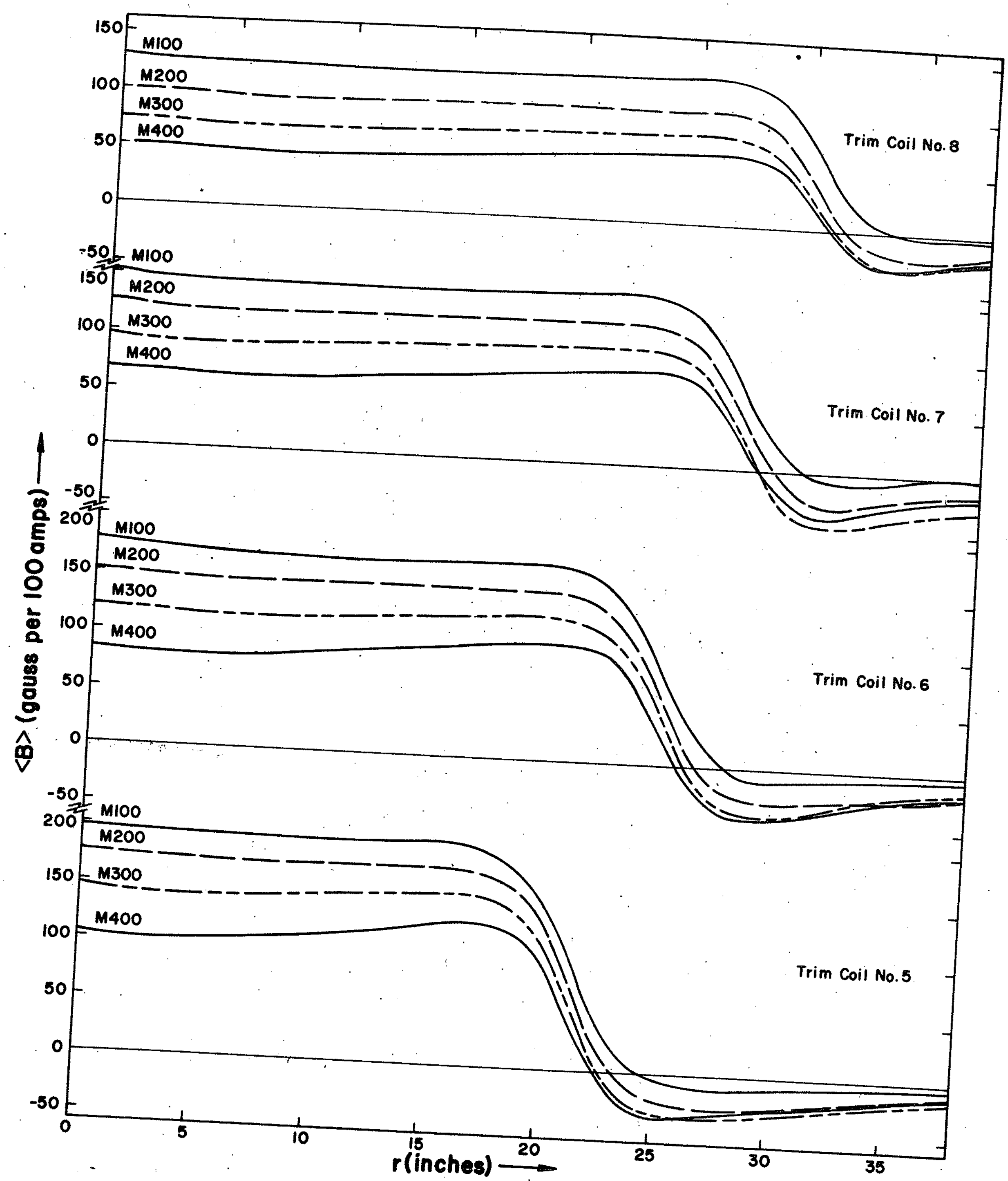

Figure 10. Average magnetic field vs. radius for trim coils 5-8 of the MSU cyclotron. Curves are shown for each trim coil for each of the four main field excitations at which the trim coil fields were measured.

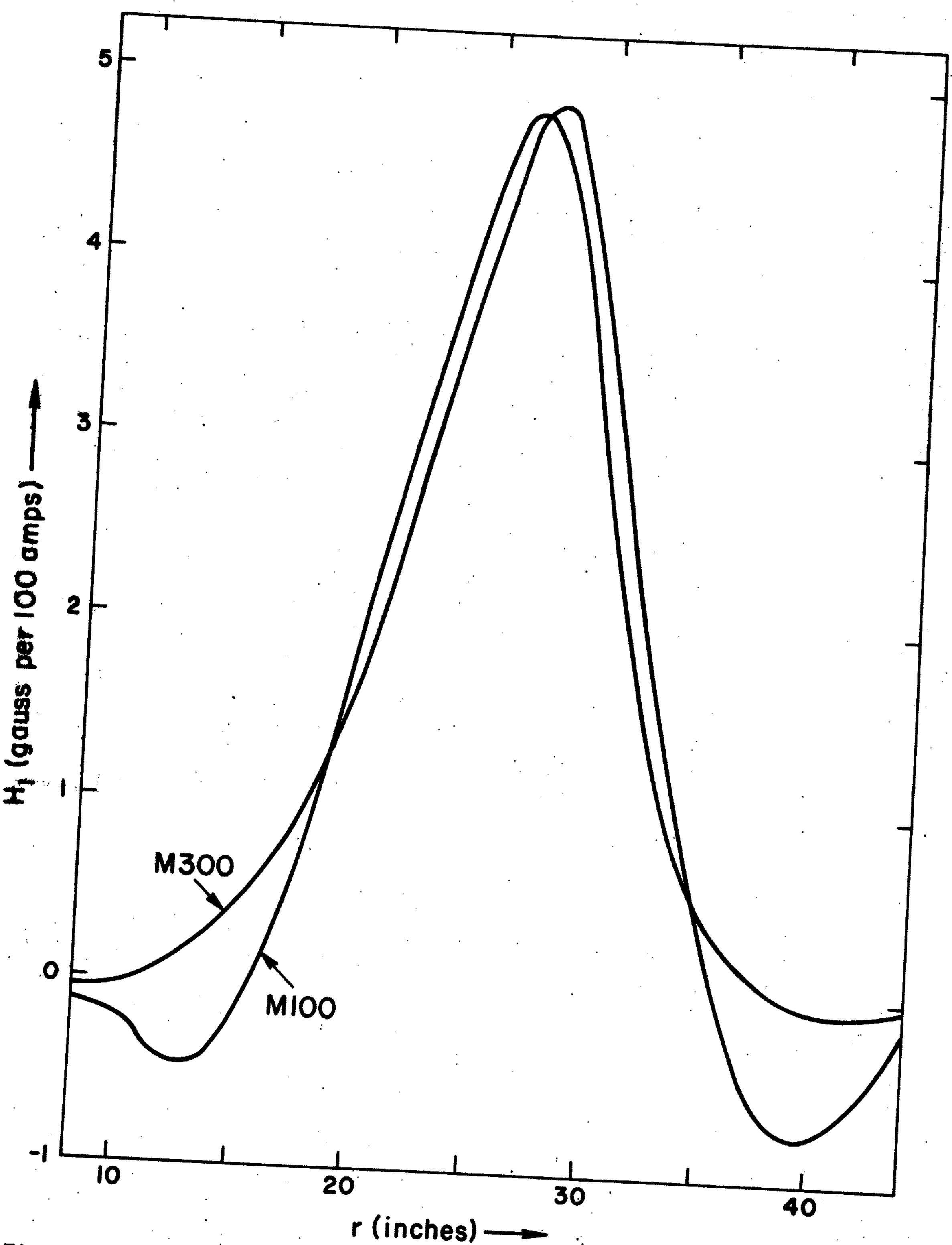

Figure 11. Smoothed magnetic field first harmonic amplitude vs. radius for one of the MSU cyclotron valley coils for both of the two main field excitations at which valley coil field was measured.

Table I.

FIELD NO.	EXCITATION (AMP-TURNS)	NMR FREQUENCY (KC)	HILL FIELD (KGAUSS)
100	117,796	5524.8	8.45239
150	147,969	6845.0	10.47217
200	183,695	8144.2	12.45981
250	235,873	9450.7	14.45863
300	304,596	10774.0	16.48314
350	415,000	12090.8	18.49771
400	475,324	12604.2	19.28317

Table II. Run 400 Fourier Components Not Included in Orbit Code Field Expansion

R	H2	G2	H12	G12	H15	G15	H18	G18
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	-0.19	-0.02	0.02	-0.07	0.10	-0.10	-0.04	0.01
2	-0.66	0.76	-0.01	0.01	0.01	-0.02	0.06	0.04
3	-1.37	2.29	-0.18	0.09	-0.01	0.27	0.14	-0.02
4	-1.80	2.33	-0.12	-0.01	-0.03	0.04	-0.01	-0.03
5	-2.37	2.38	-0.40	-0.33	-0.04	0.05	-0.11	-0.06
6	-2.66	2.84	-2.03	-0.77	0.32	0.18	0.00	0.05
7	-2.76	3.71	-5.85	-2.24	0.57	0.37	-0.25	-0.00
8	-2.63	2.98	-12.90	-4.79	1.08	0.50	-0.06	0.03
9	-2.78	3.54	-21.07	-7.98	0.34	0.01	0.56	0.66
10	-2.78	2.79	-28.71	-10.86	-2.16	-2.22	2.33	1.56
11	-2.27	3.70	-31.93	-11.41	-7.73	-6.66	3.79	3.22
12	-2.75	2.79	-29.07	-8.44	-15.13	-14.82	5.85	4.74
13	-2.71	3.23	-17.40	0.26	-24.73	-27.11	6.35	5.82
14	-2.41	2.87	0.77	15.91	-33.98	-42.79	6.01	5.60
15	-2.55	3.80	23.35	39.99	-41.90	-60.04	4.78	1.52
16	-1.58	3.12	48.94	71.05	-46.81	-77.73	2.05	-5.10
17	-2.84	2.96	74.63	109.02	-50.22	-93.86	-0.43	-15.64
18	-1.12	2.55	98.50	151.70	-48.95	-108.08	-1.13	-29.83
19	-2.42	3.32	121.08	197.35	-47.72	-118.54	-1.05	-46.52
20	-1.28	2.72	139.52	245.62	-43.05	-124.88	1.28	-65.10
21	-1.22	2.52	155.15	294.27	-39.30	-127.96	5.40	-85.66
22	-0.86	2.92	166.00	342.78	-32.09	-125.69	12.51	-105.37
23	-0.66	2.84	173.82	387.80	-27.54	-120.58	20.84	-125.61
24	-0.03	3.04	175.37	428.00	-21.35	-111.13	33.32	-142.93
25	0.54	1.68	174.61	456.58	-20.40	-100.45	45.16	-158.05
26	1.27	1.58	165.83	472.59	-19.81	-87.02	61.52	-167.08
27	2.21	1.46	155.06	467.40	-24.63	-76.14	76.96	-171.74
28	2.90	1.75	142.31	436.86	-30.12	-69.00	93.41	-169.17
29	3.64	0.62	134.78	377.94	-38.83	-70.51	103.14	-162.90
30	4.94	1.05	132.91	302.50	-43.53	-74.63	106.19	-150.77
31	5.85	0.99	133.92	227.59	-42.35	-73.62	97.88	-132.96
32	6.23	1.78	129.89	167.43	-33.49	-58.41	80.98	-105.05
33	6.11	1.51	113.54	121.97	-23.86	-37.80	58.49	-74.88
34	7.02	1.98	89.73	86.50	-15.39	-19.76	37.91	-47.90
35	8.03	1.57	64.41	59.57	-9.86	-9.22	22.83	-28.99
36	9.95	1.45	43.63	39.53	-6.04	-3.51	12.95	-16.53
37	11.49	0.31	28.31	25.63	-3.85	-1.21	7.10	-9.48
38	14.11	-0.55	18.11	16.29	-2.28	-0.21	3.82	-5.19
39	16.70	-1.95	11.34	10.23	-1.45	0.11	2.23	-2.75
40	20.10	-3.86	7.27	6.39	-0.93	0.22	1.18	-1.59
41	23.43	-5.99	4.61	4.00	-0.67	0.16	0.73	-0.83
42	27.43	-8.60	2.91	2.36	-0.33	0.19	0.34	-0.53
43	31.37	-11.62	1.99	1.38	-0.24	0.19	0.26	-0.33
44	36.09	-15.34	1.41	0.72	-0.07	0.09	0.12	-0.11
45	41.03	-19.30	1.03	0.21	0.03	0.10	0.12	0.06
46	46.38	-23.83	0.86	-0.15	-0.04	0.03	-0.03	-0.08

Table III. Field 100 Fourier Coefficients (gauss).

R	B0	H3	G3	H6	G6	H9	G9
0	6599.05	0.00	0.00	0.00	0.00	0.00	0.00
1	6575.48	-9.20	-1.76	-0.09	0.04	-0.10	0.07
2	6522.03	-70.99	-13.59	0.25	0.10	0.02	-0.05
3	6474.33	-223.41	-38.82	3.15	0.93	-0.01	0.00
4	6454.57	-476.65	-73.48	12.86	3.03	-0.10	-0.06
5	6450.81	-784.29	-107.57	29.45	5.86	0.16	0.08
6	6445.66	-1098.19	-130.81	45.48	6.30	3.40	1.26
7	6432.58	-1380.58	-156.04	49.90	4.07	12.66	4.42
8	6414.18	-1624.64	-175.55	39.80	-1.53	29.70	9.80
9	6395.46	-1832.82	-209.14	13.87	-10.44	54.04	18.58
10	6379.07	-2002.52	-236.79	-22.57	-22.90	82.09	29.11
11	6368.03	-2144.45	-284.53	-69.87	-38.92	111.51	44.18
12	6362.16	-2262.84	-326.67	-124.41	-58.23	140.46	61.40
13	6362.73	-2359.95	-386.46	-185.41	-83.62	165.73	83.88
14	6366.52	-2440.54	-435.67	-246.93	-111.02	188.24	105.44
15	6372.41	-2503.53	-495.40	-306.04	-144.42	203.48	129.22
16	6379.32	-2551.96	-546.46	-360.51	-179.24	215.29	150.22
17	6387.09	-2592.73	-591.30	-411.56	-215.23	223.90	167.93
18	6396.86	-2622.37	-638.11	-454.44	-252.93	228.86	184.40
19	6408.02	-2641.38	-675.90	-492.23	-289.97	232.66	195.86
20	6422.85	-2649.59	-716.85	-519.47	-328.10	233.98	206.02
21	6443.24	-2645.78	-752.56	-542.09	-367.26	235.48	210.86
22	6469.26	-2626.37	-795.05	-552.76	-410.90	236.80	213.22
23	6502.62	-2588.41	-835.78	-552.31	-457.51	239.52	209.39
24	6548.64	-2530.24	-877.75	-539.27	-509.55	246.12	197.13
25	6606.06	-2443.27	-928.66	-505.03	-571.38	257.80	177.18
26	6678.88	-2320.62	-982.35	-451.06	-645.43	276.91	141.25
27	6758.33	-2159.17	-1047.44	-369.04	-731.72	303.82	93.70
28	6833.98	-1951.35	-1108.82	-263.29	-827.74	340.83	25.63
29	6860.94	-1703.90	-1158.55	-135.52	-913.92	384.07	-47.73
30	6773.94	-1432.48	-1157.66	-15.76	-958.86	419.49	-118.31
31	6497.95	-1151.48	-1084.94	78.46	-928.04	428.12	-158.05
32	6010.12	-885.55	-931.14	120.25	-814.50	394.21	-164.17
33	5384.25	-653.66	-740.40	124.45	-652.44	328.21	-139.48
34	4724.76	-469.01	-552.84	103.59	-488.09	250.32	-107.87
35	4097.40	-327.43	-396.94	79.75	-347.38	179.41	-75.93
36	3544.49	-226.87	-278.52	56.92	-241.03	123.30	-52.52
37	3070.17	-156.39	-194.44	40.19	-165.32	83.32	-34.76
38	2662.02	-108.72	-135.10	27.25	-112.93	55.32	-23.24
39	2318.96	-76.47	-95.21	18.80	-78.12	37.03	-15.52
40	2022.35	-54.27	-67.20	12.66	-54.33	24.68	-10.47
41	1764.85	-38.83	-47.97	8.44	-38.31	16.57	-7.06
42	1544.48	-28.51	-34.70	5.40	-27.63	11.11	-4.93
43	1352.13	-20.88	-25.47	3.21	-20.37	7.66	-3.62
44	1185.69	-15.75	-18.47	1.77	-15.52	5.18	-2.63
45	1035.93	-12.04	-14.06	0.57	-12.15	3.73	-1.80
46	904.26	-9.27	-10.29	-0.58	-10.07	2.43	-1.50

Table IV. Field 150 Fourier Coefficients (gauss).

R	B0	H3	G3	H6	G6	H9	G9
0	8153.47	0.00	0.00	0.00	0.00	0.00	0.00
1	8121.60	-11.05	-2.40	0.02	-0.08	-0.04	-0.16
2	8054.48	-85.94	-16.30	0.33	0.12	-0.10	0.07
3	7995.86	-273.59	-48.30	3.84	1.03	-0.01	-0.00
4	7970.73	-580.11	-90.18	15.23	3.64	-0.10	-0.05
5	7968.62	-958.51	-131.42	35.86	7.03	0.31	0.25
6	7963.52	-1348.39	-163.51	55.12	7.46	4.07	1.61
7	7948.20	-1700.69	-193.52	61.81	5.33	15.65	5.60
8	7927.33	-2005.14	-222.89	48.93	-1.56	36.68	12.44
9	7906.92	-2260.57	-260.25	18.88	-12.20	66.27	23.11
10	7889.24	-2474.55	-300.80	-27.53	-28.00	101.00	36.75
11	7877.08	-2651.57	-354.46	-85.06	-47.90	137.67	55.38
12	7871.07	-2798.27	-412.09	-153.81	-72.83	173.11	77.51
13	7872.08	-2918.41	-481.04	-227.37	-103.41	204.92	104.67
14	7876.94	-3017.48	-546.71	-304.54	-138.98	231.58	132.16
15	7883.75	-3097.22	-615.99	-377.49	-179.17	252.06	160.98
16	7892.69	-3161.30	-675.36	-447.16	-221.78	267.12	185.78
17	7901.91	-3210.85	-736.81	-507.48	-266.86	277.05	209.63
18	7913.84	-3247.86	-787.36	-562.17	-311.84	283.66	227.73
19	7926.93	-3271.60	-841.32	-606.35	-358.83	287.50	244.53
20	7946.23	-3282.19	-886.24	-644.44	-405.70	289.87	254.81
21	7969.48	-3276.84	-937.01	-669.01	-455.74	291.00	263.27
22	8003.41	-3253.52	-984.04	-686.08	-509.30	292.85	263.82
23	8044.21	-3208.75	-1036.61	-684.48	-566.98	296.15	260.50
24	8100.18	-3136.82	-1087.24	-669.17	-631.41	303.93	244.98
25	8171.21	-3028.54	-1151.62	-626.76	-708.85	318.09	219.92
26	8257.05	-2879.88	-1217.80	-561.70	-799.34	340.24	175.75
27	8353.48	-2679.60	-1297.84	-460.52	-906.94	373.18	116.11
28	8442.17	-2431.33	-1371.91	-335.24	-1021.99	416.53	34.42
29	8472.64	-2123.43	-1433.36	-177.27	-1129.49	469.02	-57.62
30	8363.07	-1796.24	-1432.03	-33.44	-1182.76	510.37	-142.20
31	8019.27	-1448.12	-1341.44	82.72	-1144.33	520.04	-191.70
32	7421.15	-1119.89	-1152.62	134.65	-1005.53	478.50	-199.86
33	6647.01	-828.81	-916.22	141.85	-805.30	397.74	-170.43
34	5823.52	-593.33	-682.23	118.42	-600.30	301.91	-131.46
35	5052.94	-413.93	-488.28	91.06	-426.03	215.55	-92.55
36	4370.07	-287.56	-342.90	64.75	-295.95	148.23	-63.97
37	3787.03	-198.85	-239.34	45.79	-202.95	99.90	-42.50
38	3285.95	-138.22	-166.15	30.96	-138.74	66.34	-28.52
39	2861.33	-96.94	-117.03	21.38	-95.52	44.19	-18.96
40	2496.04	-69.30	-82.70	14.22	-66.78	29.63	-12.90
41	2181.47	-49.54	-59.14	9.46	-46.82	19.84	-8.67
42	1914.98	-36.43	-42.83	6.04	-34.00	13.56	-6.16
43	1673.86	-26.80	-31.14	3.64	-24.83	9.07	-4.28
44	1466.30	-20.17	-22.91	1.68	-18.79	6.29	-3.18
45	1282.72	-15.35	-16.87	0.39	-14.86	4.39	-2.31
46	1119.76	-11.79	-12.49	-0.87	-12.13	2.99	-1.80

Table V. Field 200 Fourier Coefficients (gauss).

R	B0	H3	G3	H6	G6	H9	G9
0	9713.42	0.00	0.00	0.00	0.00	0.00	0.00
1	9675.75	-13.32	-2.67	0.03	0.06	-0.05	-0.07
2	9594.72	-105.19	-19.90	0.48	0.17	0.04	0.02
3	9523.56	-329.35	-57.69	4.56	1.32	0.07	0.13
4	9493.52	-696.45	-107.75	18.32	4.17	-0.20	-0.01
5	9492.04	-1147.50	-156.33	41.92	7.50	0.54	0.69
6	9488.22	-1612.74	-195.07	65.70	8.92	5.21	2.08
7	9472.41	-2029.73	-229.32	72.97	5.94	18.72	6.67
8	9447.83	-2391.81	-265.68	58.79	-1.58	43.86	15.07
9	9422.31	-2693.78	-308.41	22.21	-14.32	78.66	27.29
10	9399.20	-2947.92	-358.26	-32.10	-32.71	120.68	44.01
11	9383.78	-3155.98	-418.93	-101.17	-56.18	163.88	65.33
12	9375.69	-3330.51	-489.91	-181.52	-85.89	206.38	92.28
13	9375.49	-3473.13	-568.88	-270.92	-122.11	244.50	123.71
14	9380.52	-3591.26	-649.17	-361.28	-164.36	276.57	157.48
15	9388.26	-3685.05	-728.48	-449.22	-211.73	300.27	190.51
16	9398.43	-3754.95	-802.22	-529.43	-262.47	317.44	220.95
17	9409.04	-3816.95	-871.82	-602.49	-315.42	330.32	248.55
18	9423.43	-3859.37	-934.17	-666.21	-368.49	338.08	271.09
19	9439.30	-3889.17	-996.11	-721.66	-425.10	342.09	289.80
20	9460.02	-3900.98	-1052.53	-764.58	-480.54	344.12	303.48
21	9486.76	-3897.75	-1110.41	-796.48	-539.97	346.20	312.69
22	9524.14	-3872.23	-1165.75	-814.66	-600.80	347.86	314.95
23	9571.20	-3821.70	-1226.14	-817.70	-669.71	350.49	309.15
24	9637.84	-3738.98	-1289.82	-799.35	-745.71	358.23	293.20
25	9716.22	-3616.40	-1362.61	-752.94	-836.48	374.26	262.49
26	9815.43	-3446.59	-1442.02	-677.92	-940.79	397.98	214.10
27	9928.29	-3211.02	-1536.13	-562.33	-1070.62	434.65	139.69
28	10024.98	-2924.10	-1625.00	-415.59	-1203.27	482.39	47.56
29	10050.51	-2582.14	-1691.69	-242.12	-1322.52	538.70	-57.13
30	9911.55	-2191.30	-1691.75	-69.31	-1384.11	585.00	-155.37
31	9492.55	-1782.79	-1581.29	61.85	-1337.57	592.97	-215.82
32	8782.68	-1396.95	-1366.00	127.18	-1178.59	545.90	-224.16
33	7862.99	-1036.37	-1080.17	138.32	-940.38	450.50	-193.04
34	6896.86	-746.37	-806.38	118.25	-701.72	341.97	-148.44
35	5988.02	-522.30	-574.77	89.61	-496.54	242.52	-105.36
36	5183.52	-366.78	-407.19	64.95	-347.60	168.18	-72.82
37	4489.95	-254.58	-283.20	45.03	-237.93	112.71	-48.85
38	3900.94	-177.24	-197.17	30.66	-162.66	74.95	-32.42
39	3398.21	-125.41	-138.39	20.68	-112.32	50.22	-21.80
40	2964.35	-88.96	-97.53	13.72	-77.92	33.20	-14.56
41	2588.80	-64.33	-69.90	9.01	-54.85	22.43	-10.08
42	2266.40	-47.00	-50.05	5.59	-39.08	15.17	-7.01
43	1980.48	-34.95	-36.55	3.20	-28.50	10.18	-4.91
44	1733.18	-26.18	-26.56	1.35	-21.50	6.93	-3.69
45	1510.64	-19.92	-19.52	0.04	-16.43	4.90	-2.75
46	1315.14	-15.13	-14.51	-1.28	-13.27	3.29	-2.22

Table VI. Field 250 Fourier Coefficients (gauss).

R	B0	H3	G3	H6	G6	H9	G9
0	11279.99	0.00	0.00	0.00	0.00	0.00	0.00
1	11236.80	-15.39	-3.20	-0.07	-0.07	-0.07	-0.04
2	11139.47	-114.67	-21.74	0.59	0.10	0.01	-0.03
3	11051.14	-374.06	-65.16	4.97	1.19	0.04	-0.03
4	11012.70	-785.02	-121.81	19.71	4.23	-0.07	0.07
5	11008.92	-1302.28	-175.63	46.56	8.17	0.61	0.42
6	11006.66	-1839.37	-222.87	74.02	9.76	6.00	2.50
7	10992.67	-2325.31	-262.42	84.14	6.82	21.48	7.78
8	10967.08	-2745.93	-306.30	68.44	-1.32	50.07	17.21
9	10938.10	-3099.91	-351.95	27.67	-15.63	90.59	31.08
10	10910.94	-3390.55	-414.26	-32.36	-35.87	137.70	50.47
11	10893.48	-3637.04	-483.94	-112.22	-63.21	189.16	75.55
12	10884.19	-3835.10	-566.37	-204.04	-97.02	237.12	106.36
13	10883.42	-4003.96	-652.77	-307.33	-138.10	282.53	142.27
14	10888.83	-4136.42	-748.98	-407.87	-185.68	318.26	181.62
15	10897.92	-4246.43	-838.08	-508.02	-239.62	346.79	219.86
16	10909.62	-4332.98	-925.09	-602.29	-298.09	366.67	255.50
17	10921.28	-4403.07	-998.67	-686.90	-356.45	382.02	285.42
18	10934.48	-4453.56	-1077.91	-758.42	-419.13	390.35	314.11
19	10951.05	-4489.03	-1146.04	-822.01	-481.98	395.98	335.78
20	10973.89	-4504.99	-1212.42	-873.40	-546.49	397.51	351.78
21	11001.09	-4501.81	-1270.25	-911.63	-609.71	399.65	360.44
22	11039.32	-4476.43	-1342.36	-932.79	-682.68	399.54	366.21
23	11085.25	-4422.43	-1408.84	-937.83	-758.00	401.89	360.77
24	11156.04	-4334.01	-1481.96	-921.64	-846.19	407.86	342.68
25	11235.36	-4200.33	-1558.65	-876.18	-944.85	422.74	307.29
26	11339.28	-4018.96	-1654.85	-793.85	-1062.88	444.98	257.31
27	11460.02	-3744.41	-1765.33	-661.28	-1213.92	483.31	170.39
28	11548.07	-3449.87	-1858.38	-513.18	-1351.48	527.29	74.53
29	11562.07	-3075.01	-1926.99	-329.80	-1480.98	582.56	-43.34
30	11385.47	-2636.14	-1930.10	-135.28	-1547.75	628.70	-148.75
31	10903.88	-2172.08	-1805.10	11.00	-1495.14	633.79	-217.33
32	10080.62	-1706.50	-1552.44	90.98	-1311.72	579.43	-230.78
33	9030.32	-1284.36	-1230.59	108.34	-1050.62	477.21	-203.41
34	7925.31	-930.88	-920.47	98.54	-784.09	361.88	-155.71
35	6897.38	-661.57	-661.99	75.77	-560.92	258.79	-112.14
36	5979.64	-462.69	-464.29	54.05	-388.97	177.51	-77.26
37	5182.22	-319.82	-319.16	35.99	-264.03	117.71	-52.09
38	4493.51	-223.92	-222.33	24.69	-180.69	78.49	-34.43
39	3909.82	-157.30	-154.74	16.01	-123.36	51.72	-23.05
40	3411.01	-112.45	-109.02	10.31	-85.74	34.77	-15.59
41	2979.77	-80.89	-76.81	6.24	-59.80	23.10	-10.82
42	2597.12	-58.63	-54.43	3.58	-42.26	15.42	-7.35
43	2262.76	-43.19	-38.88	1.62	-30.31	10.39	-5.18
44	1977.79	-32.31	-28.38	0.16	-22.51	7.11	-3.94
45	1716.03	-24.36	-20.36	-1.02	-17.05	4.77	-2.96
46	1485.01	-18.50	-14.50	-1.80	-13.32	3.20	-2.29

Table VII. Field 300 Fourier Coefficients (gauss).

R	B0	H3	G3	H6	G6	H9	G9
0	12912.38	0.00	0.00	0.00	0.00	0.00	0.00
1	12861.39	-16.75	-3.50	-0.09	-0.00	-0.09	0.13
2	12742.64	-128.75	-24.18	0.63	0.16	-0.10	0.06
3	12629.06	-411.67	-71.55	5.20	1.23	0.02	0.04
4	12574.23	-871.95	-134.17	21.10	4.56	0.04	0.22
5	12563.40	-1453.93	-199.53	50.72	8.94	1.18	0.78
6	12562.57	-2052.35	-253.09	80.93	10.62	7.45	3.16
7	12553.03	-2606.71	-296.68	93.90	7.93	24.40	8.97
8	12532.94	-3082.51	-352.46	80.29	-0.22	55.83	20.00
9	12507.35	-3485.69	-404.44	37.30	-15.33	100.43	35.28
10	12482.73	-3817.29	-477.94	-28.13	-37.39	153.57	57.97
11	12467.82	-4093.91	-549.99	-114.95	-66.85	210.79	85.05
12	12460.92	-4320.45	-650.82	-215.72	-104.76	265.69	122.11
13	12462.53	-4507.34	-743.05	-327.74	-149.09	316.06	161.01
14	12470.09	-4659.32	-858.33	-441.76	-204.34	356.93	208.25
15	12481.12	-4784.02	-950.65	-554.09	-262.24	390.16	249.41
16	12493.77	-4878.09	-1039.46	-658.04	-324.51	414.66	288.52
17	12505.00	-4953.07	-1133.08	-749.41	-391.64	429.53	325.77
18	12518.12	-5014.55	-1210.13	-832.75	-457.87	442.03	355.80
19	12535.34	-5052.09	-1292.02	-900.33	-527.75	446.10	382.39
20	12555.10	-5073.79	-1359.83	-960.70	-596.68	449.12	399.70
21	12582.48	-5071.71	-1435.53	-1001.52	-669.69	447.89	413.82
22	12619.46	-5049.25	-1503.41	-1030.69	-744.57	449.38	418.65
23	12663.73	-4991.65	-1584.84	-1037.79	-831.04	448.08	415.89
24	12724.44	-4902.71	-1658.90	-1026.27	-922.25	452.66	396.89
25	12799.45	-4765.59	-1751.03	-979.61	-1030.20	462.41	364.65
26	12895.26	-4574.93	-1847.05	-899.12	-1153.69	483.50	308.50
27	12996.74	-4312.69	-1960.97	-773.07	-1299.36	513.06	229.83
28	13071.51	-3980.49	-2063.33	-609.52	-1451.26	557.27	121.26
29	13053.53	-3573.82	-2141.57	-407.53	-1582.87	609.29	3.37
30	12824.18	-3107.22	-2131.89	-209.07	-1642.86	650.85	-109.53
31	12264.50	-2585.88	-1993.38	-45.77	-1580.93	651.72	-181.45
32	11336.37	-2067.25	-1717.58	40.18	-1389.94	593.16	-204.18
33	10166.46	-1556.02	-1357.70	73.55	-1107.42	485.31	-180.79
34	8943.91	-1142.54	-1015.75	67.60	-829.59	366.67	-142.66
35	7793.35	-810.41	-726.05	52.96	-588.95	259.38	-102.12
36	6772.64	-570.02	-506.82	35.64	-408.11	176.75	-71.40
37	5887.03	-394.84	-348.02	23.44	-276.50	117.17	-47.33
38	5115.57	-277.12	-240.02	14.22	-188.47	77.43	-32.01
39	4456.33	-193.72	-164.93	8.48	-127.75	50.71	-21.30
40	3882.43	-137.27	-113.65	4.30	-87.61	33.37	-14.47
41	3388.48	-98.08	-79.26	1.97	-60.51	22.14	-9.88
42	2953.86	-70.86	-55.17	0.07	-42.26	14.52	-6.94
43	2571.03	-51.52	-38.51	-1.04	-29.90	9.80	-5.01
44	2231.54	-38.08	-26.61	-1.88	-21.45	6.42	-3.77
45	1930.30	-28.01	-18.61	-2.53	-15.68	4.23	-2.96
46	1658.91	-20.99	-12.57	-3.07	-11.81	2.78	-2.32

Table VIII. Field 350 Fourier Coefficients (gauss).

R	B0	H3	G3	H6	G6	H9	G9
0	14629.86	0.00	0.00	0.00	0.00	0.00	0.00
1	14566.42	-18.78	-3.63	0.31	-0.18	-0.27	-0.14
2	14418.82	-137.11	-25.48	0.56	0.15	0.14	-0.02
3	14268.99	-428.87	-73.77	5.29	1.32	0.02	0.07
4	14185.65	-913.57	-140.54	21.97	4.55	0.07	0.13
5	14161.26	-1527.41	-208.15	52.88	9.38	1.51	0.80
6	14160.65	-2167.96	-265.38	86.75	11.97	8.06	3.50
7	14158.88	-2769.91	-319.79	105.43	10.66	25.87	9.53
8	14154.74	-3293.28	-374.64	99.11	4.10	58.24	20.75
9	14144.38	-3738.29	-441.12	62.13	-8.68	105.04	37.54
10	14134.23	-4108.29	-512.97	-0.55	-29.46	162.66	61.28
11	14129.88	-4413.07	-600.95	-87.07	-58.00	224.80	92.21
12	14131.79	-4662.33	-699.05	-189.34	-94.54	286.50	131.05
13	14141.09	-4865.65	-809.19	-305.57	-140.31	342.19	176.74
14	14153.77	-5030.75	-918.58	-423.13	-193.45	389.71	225.58
15	14167.72	-5163.01	-1028.90	-539.66	-254.54	426.03	274.49
16	14181.65	-5271.00	-1130.98	-647.59	-319.65	454.40	320.66
17	14192.12	-5351.02	-1226.83	-745.96	-387.94	472.41	362.00
18	14203.75	-5413.76	-1312.82	-831.51	-456.26	485.89	397.54
19	14215.61	-5455.80	-1396.44	-906.64	-527.28	492.06	427.81
20	14229.51	-5480.89	-1467.57	-966.76	-595.48	498.11	450.64
21	14247.05	-5478.42	-1549.65	-1015.89	-672.61	494.42	468.27
22	14273.30	-5457.38	-1619.04	-1048.45	-747.41	495.26	476.19
23	14303.50	-5400.26	-1705.98	-1060.19	-834.65	489.48	476.99
24	14350.20	-5313.35	-1782.79	-1049.97	-924.33	492.73	461.66
25	14407.54	-5174.29	-1881.57	-1006.76	-1033.52	495.36	431.84
26	14478.97	-4982.14	-1978.92	-927.86	-1154.71	511.61	376.93
27	14541.25	-4713.13	-2097.66	-802.02	-1298.87	532.51	297.66
28	14572.77	-4365.84	-2200.67	-632.89	-1446.72	570.78	187.78
29	14497.55	-3928.38	-2277.48	-425.12	-1578.01	614.72	61.70
30	14203.94	-3422.17	-2258.89	-220.28	-1637.29	650.70	-60.25
31	13569.80	-2853.76	-2107.46	-51.62	-1575.04	646.83	-141.22
32	12560.51	-2276.20	-1806.87	38.85	-1379.53	585.03	-172.38
33	11305.47	-1724.64	-1430.38	71.90	-1101.15	477.89	-157.53
34	9983.76	-1258.80	-1059.61	65.66	-818.05	357.61	-125.05
35	8737.34	-890.20	-751.01	49.93	-577.44	251.33	-89.87
36	7623.19	-619.77	-516.42	32.52	-395.80	169.38	-62.08
37	6657.05	-425.75	-349.43	20.49	-266.33	111.64	-41.03
38	5814.50	-291.74	-232.97	11.09	-177.71	72.37	-27.32
39	5085.06	-199.05	-154.54	5.64	-118.42	46.80	-18.00
40	4445.52	-136.52	-101.63	1.84	-79.19	30.18	-12.12
41	3885.72	-93.19	-66.18	-0.29	-53.18	19.52	-8.27
42	3393.04	-63.92	-42.22	-1.93	-35.82	12.63	-5.84
43	2953.24	-43.57	-26.06	-2.77	-24.21	8.07	-4.18
44	2561.07	-29.52	-15.06	-3.37	-16.49	5.09	-3.36
45	2208.67	-19.76	-7.86	-3.88	-11.38	3.12	-2.55
46	1890.83	-12.99	-2.83	-4.25	-7.95	1.83	-2.24

Table IX. Field 400 Fourier Coefficients (gauss).

R	B0	H3	G3	H6	G6	H9	G9
0	15374.57	0.00	0.00	0.00	0.00	0.00	0.00
1	15307.44	-17.54	-3.46	-0.04	-0.08	-0.04	-0.00
2	15149.15	-135.10	-25.49	0.53	0.08	0.03	-0.01
3	14982.73	-427.57	-73.68	5.64	1.42	0.11	0.30
4	14881.97	-908.87	-141.52	21.81	4.63	0.11	0.13
5	14845.56	-1531.28	-211.51	54.36	9.25	1.36	0.79
6	14839.58	-2172.14	-270.12	88.38	12.70	7.78	3.39
7	14836.10	-2784.89	-322.48	111.80	11.89	25.35	9.64
8	14834.13	-3319.31	-384.09	107.49	6.98	57.39	20.61
9	14828.30	-3773.08	-446.10	77.87	-4.89	103.92	37.65
10	14823.59	-4151.54	-524.59	17.92	-23.67	161.00	61.16
11	14824.80	-4465.01	-610.26	-61.03	-49.92	224.15	92.50
12	14831.10	-4723.29	-713.94	-162.74	-84.57	286.44	132.03
13	14842.50	-4934.52	-822.71	-273.61	-127.95	344.73	179.06
14	14856.70	-5104.21	-937.23	-392.75	-180.61	393.30	229.39
15	14871.78	-5241.65	-1044.38	-505.34	-238.74	433.28	279.73
16	14886.41	-5348.22	-1150.01	-614.48	-303.06	461.59	327.74
17	14897.25	-5434.57	-1242.38	-711.42	-368.54	484.40	370.72
18	14908.11	-5494.33	-1336.38	-799.00	-438.61	495.70	409.60
19	14918.18	-5540.22	-1414.51	-872.61	-505.11	506.42	441.54
20	14928.58	-5558.90	-1498.02	-935.63	-578.02	507.13	467.78
21	14939.97	-5561.24	-1571.27	-983.05	-649.02	509.43	486.93
22	14959.28	-5534.39	-1652.54	-1017.00	-727.71	503.75	498.21
23	14981.80	-5482.28	-1729.16	-1030.25	-808.72	503.14	499.20
24	15018.13	-5388.82	-1817.96	-1021.62	-902.94	498.83	487.24
25	15060.57	-5254.08	-1904.76	-981.91	-1005.53	505.01	456.47
26	15116.87	-5054.19	-2012.50	-904.57	-1131.59	513.37	403.30
27	15162.29	-4783.80	-2121.15	-783.06	-1272.09	535.66	322.01
28	15174.05	-4424.40	-2229.91	-615.54	-1424.33	567.25	212.35
29	15072.85	-3976.96	-2298.17	-411.23	-1555.96	611.32	82.64
30	14753.13	-3449.40	-2278.13	-205.96	-1618.72	643.89	-41.95
31	14087.36	-2871.28	-2116.73	-42.85	-1557.77	639.01	-128.38
32	13047.70	-2273.08	-1811.39	50.74	-1362.00	576.98	-160.53
33	11764.36	-1720.26	-1429.59	79.52	-1085.98	470.41	-148.99
34	10413.88	-1246.73	-1054.28	72.42	-803.50	351.07	-118.58
35	9143.20	-877.87	-742.83	54.31	-565.36	246.09	-85.24
36	8002.82	-603.98	-506.07	36.21	-384.57	165.11	-58.40
37	7007.42	-410.75	-337.62	21.96	-256.99	107.99	-38.83
38	6136.34	-276.07	-221.39	12.44	-169.89	69.71	-25.50
39	5377.56	-184.59	-142.77	5.95	-111.86	44.57	-16.78
40	4709.44	-122.24	-90.37	1.96	-73.71	28.41	-11.26
41	4122.31	-80.49	-55.52	-0.56	-48.44	18.07	-7.66
42	3603.17	-52.09	-32.60	-2.25	-32.02	11.45	-5.43
43	3137.18	-32.89	-17.25	-3.32	-20.99	7.26	-4.01
44	2719.51	-19.96	-7.14	-3.97	-13.78	4.42	-3.17
45	2343.74	-11.28	-0.59	-4.49	-8.97	2.59	-2.54
46	2004.01	-5.48	3.68	-4.93	-6.06	1.40	-2.17

Table X. Smootned First Harmonic Data (gauss).

R	RUN 100 H1	RUN 100 G1	RUN 150 H1	RUN 150 G1	RUN 200 H1	RUN 200 G1	RUN 250 H1	RUN 250 G1
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	-0.08	-0.13	0.23	-0.24	-0.09	-0.19	0.29	-0.26
2	-0.16	-0.30	0.55	-0.52	-0.22	-0.50	0.41	-0.96
3	-0.32	-0.49	0.36	-0.71	-0.40	-0.78	0.39	-1.34
4	-0.49	-0.50	0.03	-0.71	-0.57	-0.95	0.14	-1.40
5	-0.62	-0.46	-0.25	-0.64	-0.69	-0.99	-0.10	-1.33
6	-0.67	-0.35	-0.41	-0.49	-0.74	-0.89	-0.30	-1.14
7	-0.64	-0.19	-0.46	-0.28	-0.69	-0.68	-0.41	-0.90
8	-0.53	-0.01	-0.39	-0.05	-0.56	-0.45	-0.42	-0.71
9	-0.38	0.14	-0.24	0.14	-0.37	-0.29	-0.33	-0.66
10	-0.21	0.25	-0.06	0.26	-0.17	-0.26	-0.16	-0.77
11	-0.05	0.28	0.10	0.29	0.02	-0.33	0.05	-1.02
12	0.08	0.26	0.20	0.24	0.17	-0.47	0.27	-1.30
13	0.18	0.20	0.26	0.13	0.26	-0.59	0.45	-1.50
14	0.25	0.14	0.27	0.01	0.31	-0.62	0.56	-1.54
15	0.30	0.08	0.26	-0.11	0.33	-0.54	0.61	-1.41
16	0.36	0.05	0.26	-0.19	0.33	-0.39	0.60	-1.17
17	0.42	0.04	0.28	-0.24	0.33	-0.24	0.56	-0.93
18	0.49	0.04	0.33	-0.25	0.33	-0.16	0.51	-0.79
19	0.56	0.03	0.39	-0.25	0.33	-0.20	0.50	-0.83
20	0.61	0.02	0.44	-0.22	0.33	-0.35	0.52	-1.03
21	0.64	0.00	0.47	-0.18	0.33	-0.55	0.58	-1.30
22	0.64	-0.00	0.47	-0.11	0.33	-0.71	0.66	-1.53
23	0.62	0.00	0.44	-0.04	0.34	-0.76	0.75	-1.62
24	0.59	0.02	0.39	0.04	0.37	-0.66	0.84	-1.52
25	0.56	0.04	0.35	0.10	0.45	-0.48	0.94	-1.29
26	0.54	0.03	0.34	0.09	0.57	-0.30	1.03	-1.03
27	0.55	-0.04	0.37	0.01	0.75	-0.23	1.15	-0.88
28	0.58	-0.18	0.45	-0.17	0.97	-0.35	1.31	-0.93
29	0.64	-0.39	0.56	-0.44	1.21	-0.67	1.50	-1.21
30	0.73	-0.65	0.71	-0.75	1.46	-1.14	1.74	-1.65
31	0.84	-0.92	0.86	-1.07	1.68	-1.62	2.00	-2.11
32	0.96	-1.15	1.03	-1.33	1.88	-1.99	2.29	-2.46
33	1.09	-1.29	1.21	-1.49	2.06	-2.16	2.58	-2.58
34	1.23	-1.31	1.40	-1.52	2.21	-2.07	2.87	-2.45
35	1.37	-1.23	1.61	-1.44	2.38	-1.77	3.16	-2.10
36	1.52	-1.06	1.85	-1.26	2.55	-1.33	3.46	-1.64
37	1.67	-0.83	2.11	-1.03	2.76	-0.88	3.75	-1.18
38	1.83	-0.58	2.37	-0.78	2.98	-0.49	4.06	-0.80
39	1.99	-0.35	2.62	-0.54	3.22	-0.20	4.36	-0.53
40	2.14	-0.15	2.84	-0.33	3.44	-0.01	4.65	-0.33
41	2.29	-0.01	3.00	-0.15	3.64	0.11	4.91	-0.15
42	2.43	0.08	3.11	-0.00	3.79	0.21	5.13	0.04
43	2.54	0.14	3.17	0.11	3.90	0.30	5.31	0.27
44	2.63	0.18	3.20	0.20	3.97	0.39	5.44	0.50
45	2.69	0.19	3.20	0.26	4.01	0.47	5.51	0.67
46	2.71	0.20	3.20	0.27	4.02	0.49	5.54	0.73

Table XI. Smoothed First Harmonic Data (gauss).

R	RUN 300 H1	RUN 300 G1	RUN 350 H1	RUN 350 G1	RUN 400 H1	RUN 400 G1
0	0.00	0.00	0.00	0.00	0.00	0.00
1	-0.10	-0.17	-0.09	-0.18	-0.10	-0.18
2	-0.28	-0.42	-0.28	-0.40	-0.24	-0.40
3	-0.49	-0.59	-0.47	-0.50	-0.40	-0.52
4	-0.67	-0.66	-0.60	-0.45	-0.38	-0.49
5	-0.74	-0.71	-0.59	-0.34	-0.17	-0.39
6	-0.66	-0.73	-0 43	-0.19	0.23	-0.22
7	-0.45	-0.74	-0.16	-0.04	0.74	0.00
8	-0.16	-0 77	0.16	0.06	1.26	0.24
9	0.14	-0.82	0.42	0.09	1.68	0.44
10	0.41	-0 92	0.59	0.04	1.92	0.60
11	0.58	-1.02	0.65	-0.04	1.98	0.72
12	0.68	-1.11	0.63	-0.09	1.94	0.83
13	0.71	-1.15	0.59	-0.07	1.88	0.95
14	0.71	-1.12	0.58	0.05	1.87	1.09
15	0.74	-1.03	0.61	0.24	1.95	1.24
16	0.79	-0.93	0.68	0.44	2.06	1.37
17	0.86	-0.85	0.73	0.57	2.13	1.45
18	0.94	-0.83	0.72	0.55	2.10	1.44
19	0.98	-0.87	0.66	0.38	1.94	1.35
20	0.99	-0.94	0.57	0.09	1.68	1.21
21	0.95	-1.01	0.51	-0.24	1.43	1.07
22	0.90	-1.02	0.57	-0.50	1.31	0.97
23	0.87	-0.96	0.76	-0.65	1.39	0.93
24	0.90	-0.83	1.08	-0.65	1.68	0.95
25	1.01	-0.69	1.42	-0.57	2.08	0.94
26	1.20	-0.62	1.68	-0.48	2.45	0.83
27	1.47	-0.67	1.73	-0.50	2.61	0.56
28	1.78	-0.88	1.50	-0.67	2.48	0.09
29	2.10	-1.23	1.03	-1.01	2.05	-0.53
30	2.43	-1.64	0.43	-1.46	1.43	-1.24
31	2.75	-2.03	-0.14	-1.89	0.82	-1.89
32	3.08	-2.28	-0.49	-2.20	0.43	-2.38
33	3.44	-2.35	-0.47	-2.31	0.44	-2.63
34	3.83	-2.20	-0.04	-2.19	0.90	-2.63
35	4.26	-1.88	0.76	-1.91	1.78	-2.41
36	4.72	-1.46	1.83	-1.54	2.94	-2.08
37	5.18	-1.01	3.00	-1.20	4.19	-1.74
38	5.64	-0.60	4.14	-0.96	5.38	-1.48
39	6.06	-0.26	5.15	-0.85	6.39	-1.34
40	6.45	-0.00	5.97	-0.86	7.19	-1.32
41	6.78	0.21	6.61	-0.95	7.80	-1.38
42	7.06	0.39	7.11	-1.05	8.25	-1.49
43	7.28	0.55	7.48	-1.12	8.60	-1.60
44	7.45	0.68	7.75	-1.17	8.86	-1.69
45	7.55	0.77	7.91	-1.19	9.02	-1.74
46	7.58	0.81	7.97	-1.19	9.07	-1.76

Table XII. Run 100 Ideal Average Fields (gauss).

R	P (+1)	HE3 (+2)	D (+1)	C12 (+4)	HEAVY ION
0	6868.38	6905.43	6927.03	7002.32	6952.18
1	6868.60	6905.59	6927.18	7002.44	6952.29
2	6868.79	6905.62	6927.14	7002.36	6952.18
3	6867.45	6904.01	6925.43	7000.65	6950.36
4	6862.27	6898.51	6919.80	6994.97	6944.55
5	6852.73	6888.55	6909.69	6984.78	6934.22
6	6841.25	6876.56	6897.50	6972.28	6921.78
7	6830.48	6865.16	6885.86	6960.19	6909.83
8	6820.97	6854.90	6875.30	6949.76	6898.91
9	6814.23	6847.27	6867.34	6941.20	6890.52
10	6809.34	6841.37	6861.06	6934.33	6883.75
11	6805.63	6836.52	6855.78	6928.73	6877.93
12	6803.32	6832.94	6851.75	6924.07	6873.30
13	6802.30	6830.52	6848.81	6921.34	6869.70
14	6802.71	6829.40	6847.16	6919.61	6867.32
15	6804.96	6830.01	6847.15	6917.98	6866.56
16	6807.42	6830.69	6847.21	6917.50	6865.79
17	6810.08	6831.46	6847.29	6917.83	6864.99
18	6815.36	6834.72	6849.82	6919.79	6866.59
19	6821.74	6838.95	6853.28	6922.73	6869.07
20	6829.71	6844.64	6858.16	6927.07	6872.88
21	6839.97	6852.50	6865.17	6933.53	6878.79
22	6853.47	6863.45	6875.22	6943.04	6887.68
23	6870.10	6877.41	6888.24	6955.50	6899.48
24	6889.67	6894.17	6904.02	6970.72	6914.01
25	6914.94	6916.52	6925.35	6991.51	6934.02
26	6941.64	6940.17	6947.95	7013.55	6955.25
27	6970.17	6965.55	6972.23	7037.26	6978.12
28	6997.90	6990.00	6995.56	7060.00	7000.00
29	6940.00	6920.00	6930.25	7000.00	6940.00
30	6773.94	6773.94	6773.94	6773.94	6773.94
31	6497.95	6497.95	6497.95	6497.95	6497.95
32	6010.12	6010.12	6010.12	6010.12	6010.12
33	5384.25	5384.25	5384.25	5384.25	5384.25
34	4724.76	4724.76	4724.76	4724.76	4724.76
35	4097.40	4097.40	4097.40	4097.40	4097.40
36	3544.49	3544.49	3544.49	3544.49	3544.49
37	3070.17	3070.17	3070.17	3070.17	3070.17
38	2662.02	2662.02	2662.02	2662.02	2662.02
39	2318.96	2318.96	2318.96	2318.96	2318.96
40	2022.35	2022.35	2022.35	2022.35	2022.35
41	1764.85	1764.85	1764.85	1764.85	1764.85
42	1544.48	1544.48	1544.48	1544.48	1544.48
43	1352.13	1352.13	1352.13	1352.13	1352.13
44	1185.69	1185.69	1185.69	1185.69	1185.69
45	1035.93	1035.93	1035.93	1035.93	1035.93
46	904.26	904.26	904.26	904.26	904.26

Table XIII. Run 150 Ideal Average Fields (gauss).

R	P (+1)	HE3 (+2)	D (+1)	C12 (+4)	HEAVY ION
0	8396.59	6453.64	8503.67	8574.31	8542.32
1	8396.92	8453.88	8503.47	8574.46	8542.46
2	8397.33	8453.99	8503.47	8574.38	8542.31
3	8396.07	8452.25	8501.75	8572.32	8540.16
4	8390.30	8445.86	8495.10	8565.47	8533.21
5	8379.07	8433.90	8482.83	8552.92	8520.56
6	8365.41	8419.34	8467.88	8537.63	8505.14
7	8352.59	8405.40	8453.47	8522.83	8490.18
8	8342.19	8393.64	8441.17	8510.08	8477.20
9	8334.50	8384.32	8431.23	8499.66	8466.47
10	8329.23	8377.21	8423.41	8491.29	8457.75
11	8326.22	8372.11	8417.52	8484.81	8450.84
12	8325.02	8368.57	8413.12	8479.76	8445.32
13	8325.45	8366.45	8410.04	8476.00	8441.02
14	8327.42	8365.62	8408.19	8473.40	8437.83
15	8331.20	8366.36	8407.81	8472.24	8436.02
16	8336.22	8368.10	8408.38	8471.96	8435.04
17	8342.91	8371.29	8410.30	8472.97	8435.31
18	8351.07	8375.71	8413.36	8475.09	8436.62
19	8361.34	8382.00	8418.23	8478.95	8439.61
20	8373.92	8390.35	8425.07	8484.76	8444.50
21	8389.41	8401.34	8434.50	8493.09	8451.84
22	8408.22	8415.43	8446.91	8504.38	8462.08
23	8431.60	8433.81	8463.56	8519.86	8476.43
24	8460.18	8457.13	8485.08	8540.18	8495.55
25	8493.26	8484.71	8510.78	8564.65	8518.75
26	8530.33	8516.02	8540.14	8592.77	8545.54
27	8567.54	8547.28	8569.39	8620.70	8572.10
28	8606.41	8600.00	8600.00	8650.00	8600.00
29	8550.00	8530.00	8525.00	8550.00	8050.00
30	8363.07	8363.07	8363.07	8363.07	8363.07
31	8019.27	8019.27	8019.27	8019.27	8019.27
32	7421.15	7421.15	7421.15	7421.15	7421.15
33	6647.01	6647.01	6647.01	6647.01	6647.01
34	5823.52	5823.52	5823.52	5823.52	5823.52
35	5052.94	5052.94	5052.94	5052.94	5052.94
36	4370.07	4370.07	4370.07	4370.07	4370.07
37	3787.03	3787.03	3787.03	3787.03	3787.03
38	3285.95	3285.95	3285.95	3285.95	3285.95
39	2861.33	2861.33	2861.33	2861.33	2861.33
40	2496.04	2496.04	2496.04	2496.04	2496.04
41	2181.47	2181.47	2181.47	2181.47	2181.47
42	1914.98	1914.98	1914.98	1914.98	1914.98
43	1673.86	1673.86	1673.86	1673.86	1673.86
44	1466.30	1466.30	1466.30	1466.30	1466.30
45	1282.72	1282.72	1282.72	1282.72	1282.72
46	1119.76	1119.76	1119.76	1119.76	1119.76

Table XIV. Run 200 Ideal Average Fields (gauss).

R	P (+1)	HE3 (+2)	D (+1)	C12 (+4)	HEAVY ION
0	9840.75	9945.12	9974.65	10059.27	10038.73
1	9841.23	9945.43	9974.90	10059.47	10038.83
2	9841.96	9945.67	9974.95	10059.39	10038.64
3	9840.79	9943.74	9973.02	10057.23	10036.04
4	9834.34	9936.30	9965.05	10048.96	10027.73
5	9821.43	9922.21	9950.83	10034.33	10012.60
6	9806.02	9905.34	9932.77	10015.77	9994.43
7	9791.69	9889.20	9916.42	9998.84	9976.73
8	9780.58	9875.87	9902.78	9984.51	9961.45
9	9772.73	9865.43	9890.43	9971.39	9948.74
10	9768.31	9858.02	9882.11	9962.23	9938.74
11	9766.40	9852.72	9876.03	9955.21	9930.52
12	9766.68	9849.25	9870.86	9949.00	9923.91
13	9769.19	9847.61	9867.53	9944.55	9918.64
14	9773.88	9847.78	9866.64	9942.45	9914.94
15	9782.68	9851.62	9867.22	9941.73	9914.59
16	9790.33	9854.00	9867.59	9940.72	9912.48
17	9800.24	9858.24	9870.68	9942.33	9911.91
18	9813.36	9865.27	9875.45	9945.54	9913.83
19	9828.61	9874.04	9881.76	9950.20	9917.16
20	9846.53	9885.08	9890.37	9957.06	9922.45
21	9867.93	9899.18	9901.73	9966.60	9930.46
22	9894.32	9917.84	9917.64	9980.63	9942.71
23	9925.43	9940.80	9937.58	9998.59	9958.93
24	9962.86	9969.63	9963.34	10022.31	9980.76
25	10005.46	10003.22	9993.66	10050.51	10006.93
26	10055.73	10044.03	10031.07	10085.75	10040.06
27	10105.52	10084.02	10067.56	10119.98	10072.11
28	10151.66	10120.00	10099.92	10150.00	10100.00
29	10050.00	10050.00	10050.00	10050.00	10050.00
30	9911.55	9911.55	9911.55	9911.55	9911.55
31	9492.55	9492.55	9492.55	9492.55	9492.55
32	8782.68	8782.68	8782.68	8782.68	8782.68
33	7862.99	7862.99	7862.99	7862.99	7862.99
34	6896.86	6896.86	6896.86	6896.86	6896.86
35	5988.02	5988.02	5988.02	5988.02	5988.02
36	5183.52	5183.52	5183.52	5183.52	5183.52
37	4489.95	4489.95	4489.95	4489.95	4489.95
38	3900.94	3900.94	3900.94	3900.94	3900.94
39	3398.21	3398.21	3398.21	3398.21	3398.21
40	2964.35	2964.35	2964.35	2964.35	2964.35
41	2588.80	2588.80	2588.80	2588.80	2588.80
42	2266.40	2266.40	2266.40	2266.40	2266.40
43	1980.48	1980.48	1980.48	1980.48	1980.48
44	1733.18	1733.18	1733.18	1733.18	1733.18
45	1510.64	1510.64	1510.64	1510.64	1510.64
46	1315.14	1315.14	1315.14	1315.14	1315.14

Table XV. Run 250 Ideal Average Fields (gauss).

R	P (+1)	HE3 (+2)	D (+1)	C12 (+4)	HEAVY ION
0	11162.05	11368.60	11393.68	11545.80	11540.30
1	11162.71	11369.01	11394.01	11546.05	11540.49
2	11163.82	11369.41	11394.14	11545.99	11540.27
3	11163.15	11367.62	11391.93	11543.44	11537.45
4	11156.69	11359.68	11383.91	11534.47	11528.19
5	11142.86	11344.06	11367.21	11517.58	11510.94
6	11125.97	11324.95	11347.32	11496.90	11489.82
7	11110.53	11306.78	11328.20	11476.85	11469.22
8	11098.71	11291.68	11068.02	11459.52	11451.19
9	11091.87	11280.98	11299.80	11446.21	11437.04
10	11087.99	11272.68	11289.86	11434.96	11424.82
11	11088.27	11267.97	11283.28	11426.95	11415.70
12	11090.98	11265.13	11278.36	11420.46	11407.96
13	11096.68	11264.73	11275.66	11416.07	11402.20
14	11105.53	11266.90	11275.32	11413.90	11398.52
15	11116.18	11270.31	11276.00	11412.63	11395.62
16	11129.57	11275.89	11278.64	11413.17	11394.41
17	11145.00	11282.94	11282.54	11414.86	11394.22
18	11163.02	11292.01	11288.24	11418.20	11395.55
19	11184.52	11303.93	11296.58	11424.06	11399.26
20	11210.52	11319.73	11308.56	11433.45	11406.37
21	11238.29	11336.73	11321.53	11443.68	11414.20
22	11271.82	11358.84	11339.36	11458.68	11426.67
23	11312.49	11387.44	11363.44	11479.81	11445.10
24	11360.76	11422.98	11394.21	11507.54	11470.00
25	11411.55	11460.44	11426.71	11536.89	11496.40
26	11479.76	11514.60	11475.57	11582.57	11538.94
27	11538.94	11559.24	11514.81	11618.47	11571.65
28	11593.45	11600.00	11549.92	11650.00	11600.00
29	11533.61	11530.60	11532.49	11533.81	11534.90
30	11385.47	11385.47	11385.47	11385.47	11385.47
31	10903.88	10903.88	10903.88	10903.88	10903.88
32	10080.62	10080.62	10080.62	10080.62	10080.62
33	9030.32	9030.32	9030.32	9030.32	9030.32
34	7925.31	7925.31	7925.31	7925.31	7925.31
35	6897.38	6897.38	6897.38	6897.38	6897.38
36	5979.64	5979.64	5979.64	5979.64	5979.64
37	5182.22	5182.22	5182.22	5182.22	5182.22
38	4493.51	4493.51	4493.51	4493.51	4493.51
39	3909.82	3909.82	3909.82	3909.82	3909.82
40	3411.01	3411.01	3411.01	3411.01	3411.01
41	2979.77	2979.77	2979.77	2979.77	2979.77
42	2597.12	2597.12	2597.12	2597.12	2597.12
43	2262.76	2262.76	2262.76	2262.76	2262.76
44	1977.79	1977.79	1977.79	1977.79	1977.79
45	1716.03	1716.03	1716.03	1716.03	1716.03
46	1485.01	1485.01	1485.01	1485.01	1485.01

Table XVI. Run 300 Ideal Average Fields (gauss).

R	P (+1)	HE3 (+2)	D (+1)	C12 (+4)	HEAVY ION
0	12529.55	12749.21	12856.28	12932.92	12996.78
1	12530.40	12749.73	12856.67	12933.21	12996.99
2	12532.10	12750.42	12856.97	12933.23	12996.77
3	12532.15	12748.88	12854.81	12930.61	12993.76
4	12525.94	12740.60	12845.70	12920.91	12983.54
5	12512.17	12724.33	12828.42	12902.87	12964.88
6	12494.55	12703.63	12806.48	12880.02	12941.25
7	12478.72	12684.01	12785.34	12857.76	12918.05
8	12467.42	12668.11	12767.62	12838.72	12897.88
9	12461.52	12656.78	12754.17	12823.72	12881.57
10	12460.55	12649.54	12744.50	12812.28	12868.64
11	12463.36	12645.27	12737.51	12803.32	12858.01
12	12470.35	12644.36	12733.58	12797.19	12850.03
13	12480.17	12645.47	12731.38	12792.59	12843.41
14	12493.22	12648.99	12731.29	12789.89	12838.52
15	12511.72	12657.09	12735.48	12791.25	12837.50
16	12531.80	12665.96	12740.15	12792.89	12836.59
17	12552.29	12674.45	12744.15	12793.66	12834.66
18	12578.04	12687.30	12752.20	12798.25	12836.37
19	12607.91	12703.34	12763.15	12805.54	12840.59
20	12640.48	12721.85	12776.25	12814.77	12846.60
21	12677.44	12743.73	12792.41	12826.84	12855.27
22	12720.45	12771.13	12813.78	12843.91	12868.77
23	12769.35	12804.52	12840.83	12866.44	12887.55
24	12822.60	12843.59	12873.23	12894.12	12911.32
25	12883.69	12890.25	12912.93	12928.88	12942.01
26	12945.47	12944.21	12959.61	12970.43	12979.33
27	13000.09	13003.39	13011.23	13016.73	13021.25
28	13063.90	13071.39	13074.05	13075.92	13077.45
29	13053.53	13053.53	13053.53	13053.53	13053.53
30	12824.18	12824.18	12824.18	12824.18	12824.18
31	12264.50	12264.50	12264.50	12264.50	12264.50
32	11336.37	11336.37	11336.37	11336.37	11336.37
33	10166.46	10166.46	10166.46	10166.46	10166.46
34	8943.91	8943.91	8943.91	8943.91	8943.91
35	7793.35	7793.35	7793.35	7793.35	7793.35
36	6772.64	6772.64	6772.64	6772.64	6772.64
37	5887.03	5887.03	5887.03	5887.03	5887.03
38	5115.57	5115.57	5115.57	5115.57	5115.57
39	4456.33	4456.33	4456.33	4456.33	4456.33
40	3882.43	3882.43	3882.43	3882.43	3882.43
41	3388.48	3388.48	3388.48	3388.48	3388.48
42	2953.86	2953.86	2953.86	2953.86	2953.86
43	2571.03	2571.03	2571.03	2571.03	2571.03
44	2231.54	2231.54	2231.54	2231.54	2231.54
45	1930.30	1930.30	1930.30	1930.30	1930.30
46	1658.91	1658.91	1658.91	1658.91	1658.91

Table XVII. Run 350 Ideal Average Fields (gauss).

R	P (+1)	HE3 (+2)	D (+1)	C12 (+4)	HEAVY ION
0	13786.32	14155.83	14302.77	14408.49	14496.92
1	13787.38	14156.45	14303.21	14408.80	14497.11
2	13789.77	14157.51	14303.74	14408.94	14496.92
3	13790.96	14156.57	14301.95	14406.52	14493.97
4	13786.38	14149.18	14293.44	14397.17	14483.90
5	13774.38	14133.72	14276.58	14379.27	14465.11
6	13758.09	14113.22	14254.38	14355.80	14440.56
7	13743.41	14093.40	14232.48	14332.38	14415.83
8	13733.59	14077.39	14214.00	14312.07	14393.96
9	13729.72	14066.25	14199.97	14295.92	14376.00
10	13731.89	14060.04	14190.47	14283.98	14362.00
11	13739.35	14058.03	14184.74	14275.54	14351.24
12	13751.26	14059.40	14182.00	14269.77	14342.92
13	13767.24	14063.75	14181.83	14266.30	14336.66
14	13787.28	14071.07	14184.23	14265.10	14332.41
15	13809.84	14080.13	14187.96	14264.96	14328.99
16	13838.07	14092.90	14194.99	14267.81	14328.33
17	13875.18	14107.84	14203.79	14272.15	14328.91
18	13915.35	14124.25	14213.64	14277.26	14330.03
19	13967.92	14143.94	14226.35	14284.93	14333.48
20	14018.91	14167.70	14242.70	14295.94	14340.03
21	14075.79	14194.71	14261.87	14309.48	14348.87
22	14123.95	14226.61	14285.50	14327.18	14361.63
23	14187.97	14264.46	14314.63	14350.09	14379.36
24	14238.26	14309.18	14350.18	14379.12	14402.98
25	14313.01	14362.42	14393.82	14415.94	14434.15
26	14371.59	14423.59	14444.95	14459.97	14472.32
27	14462.73	14493.29	14504.18	14511.82	14518.09
28	14545.53	14555.95	14559.65	14562.24	14564.36
29	14497.55	14497.55	14497.55	14497.55	14497.55
30	14203.94	14203.94	14203.94	14203.94	14203.94
31	13569.80	13569.80	13569.80	13569.80	13569.80
32	12560.51	12560.51	12560.51	12560.51	12560.51
33	11305.47	11305.47	11305.47	11305.47	11305.47
34	9983.76	9983.76	9983.76	9983.76	9983.76
35	8737.34	8737.34	8737.34	8737.34	8737.34
36	7623.19	7623.19	7623.19	7623.19	7623.19
37	6657.05	6657.05	6657.05	6657.05	6657.05
38	5814.50	5814.50	5814.50	5814.50	5814.50
39	5085.06	5085.06	5085.06	5085.06	5085.06
40	4445.52	4445.52	4445.52	4445.52	4445.52
41	3885.72	3885.72	3885.72	3885.72	3885.72
42	3393.04	3393.04	3393.04	3393.04	3393.04
43	2953.24	2953.24	2953.24	2953.24	2953.24
44	2561.07	2561.07	2561.07	2561.07	2561.07
45	2208.67	2208.67	2208.67	2208.67	2208.67
46	1890.83	1890.83	1890.83	1890.83	1890.83

Table XVIII. Run 400 Ideal Average Fields (gauss).

R	P (+1)	HE3 (+2)	D (+1)	C12 (+4)	HEAVY ION
0	14935.00	14714.50	14879.69	14998.80	15098.59
1	14868.00	14715.16	14880.15	14999.11	15098.78
2	14710.00	14716.38	14880.78	14999.30	15098.59
3	14540.00	14715.89	14879.34	14997.15	15095.84
4	14440.00	14709.09	14871.27	14988.13	15086.01
5	14412.00	14694.82	14855.41	14971.09	15067.96
6	14394.00	14675.37	14834.05	14948.30	15043.93
7	14379.00	14656.11	14812.46	14924.99	15019.14
8	14370.00	14641.09	14794.67	14905.13	14997.52
9	14370.00	14630.86	14781.19	14889.26	14979.60
10	14376.00	14625.43	14772.07	14877.41	14965.42
11	14390.00	14624.01	14766.50	14868.77	14954.18
12	14408.00	14626.20	14764.07	14862.96	14945.48
13	14434.00	14632.08	14764.88	14860.05	14939.41
14	14465.00	14640.82	14768.10	14859.22	14935.16
15	14500.00	14652.65	14773.96	14860.71	14932.94
16	14542.00	14666.35	14781.22	14863.28	14931.56
17	14588.00	14683.15	14791.12	14868.17	14932.20
18	14638.00	14701.88	14802.49	14874.19	14933.73
19	14683.00	14724.15	14816.92	14882.95	14937.72
20	14737.00	14749.74	14834.19	14894.21	14943.95
21	14793.00	14778.73	14854.38	14908.06	14952.50
22	14850.00	14812.72	14879.07	14926.08	14964.95
23	14910.00	14852.78	14909.33	14949.33	14982.35
24	14972.00	14900.05	14946.28	14978.93	15005.86
25	15038.00	14955.53	14990.95	15015.91	15036.47
26	15101.00	15020.55	15044.65	15061.61	15075.55
27	15165.00	15093.70	15105.99	15114.62	15121.70
28	15230.00	15148.76	15152.93	15155.86	15158.26
29	15072.85	15072.85	15072.85	15072.85	15072.85
30	14753.13	14753.13	14753.13	14753.13	14753.13
31	14087.36	14087.36	14087.36	14087.36	14087.36
32	13047.70	13047.70	13047.70	13047.70	13047.70
33	11764.36	11764.36	11764.36	11764.36	11764.36
34	10413.88	10413.88	10413.88	10413.88	10413.88
35	9143.20	9143.20	9143.20	9143.20	9143.20
36	8002.82	8002.82	8002.82	8002.82	8002.82
37	7007.42	7007.42	7007.42	7007.42	7007.42
38	6136.34	6136.34	6136.34	6136.34	6136.34
39	5377.56	5377.56	5377.56	5377.56	5377.56
40	4709.44	4709.44	4709.44	4709.44	4709.44
41	4122.31	4122.31	4122.31	4122.31	4122.31
42	3603.17	3603.17	3603.17	3603.17	3603.17
43	3137.18	3137.18	3137.18	3137.18	3137.18
44	2719.51	2719.51	2719.51	2719.51	2719.51
45	2343.74	2343.74	2343.74	2343.74	2343.74
46	2004.01	2004.01	2004.01	2004.01	2004.01

Table XIX.

TRIM COIL	R(Min) INCHES	R(Max) INCHES	TOTAL TURNS
1	3.900	7.485	52
2	8.425	11.725	48
3	12.665	15.680	44
4	16.620	19.350	40
5	20.290	22.735	36
6	23.675	25.835	32
7	26.775	28.650	28
8	29.590	31.180	24

VALLEY COILS

I.D. = 9.5 in.

O.D. = 12.5 in.

DISTANCE FROM MEDIAN PLANE = 5.03 in.

THICKNESS = 0.6 in.

Table XX. Trim Coil 1 Average Fields (gauss).

R	B(M100)	B(M200)	B(M300)	B(M400)
0	278.19	272.50	256.46	214.32
1	274.89	270.28	252.39	213.55
2	262.44	257.38	241.61	206.43
3	240.38	236.06	219.57	191.34
4	205.14	201.13	185.90	161.75
5	156.83	152.86	140.43	120.90
6	103.62	99.41	89.50	73.63
7	57.79	54.58	46.50	36.10
8	26.67	24.72	18.26	10.76
9	11.16	8.93	5.11	-1.52
10	4.23	1.93	-0.78	-5.92
11	1.05	-1.12	-3.78	-7.71
12	0.15	-1.83	-4.86	-7.78
13	-0.57	-2.50	-5.32	-7.34
14	-0.75	-2.66	-5.12	-6.40
15	-1.02	-2.79	-4.96	-5.78
16	-1.19	-2.78	-4.67	-5.21
17	-1.28	-2.68	-4.31	-4.70
18	-1.32	-2.51	-3.91	-4.27
19	-1.38	-2.49	-3.78	-4.00
20	-1.41	-2.48	-3.69	-3.81
21	-1.43	-2.46	-3.63	-3.70
22	-1.43	-2.44	-3.60	3.67
23	-1.41	-2.41	-3.58	-3.70
24	-1.39	-2.36	-3.56	-3.78
25	-1.40	-2.26	-3.42	-3.61
26	-1.41	-2.15	-3.25	-3.42
27	-1.42	-2.02	-3.07	-3.21
28	-1.43	-1.88	-2.88	-2.98
29	-1.44	-1.73	-2.67	-2.75
30	-1.44	-1.58	-2.45	2.50
31	-1.43	-1.42	-2.23	-2.25
32	-1.42	-1.26	-2.00	2.00
33	-1.39	-1.15	-1.74	-1.73
34	-1.35	-1.03	-1.47	-1.45
35	-1.31	-0.92	-1.21	-1.18
36	-1.25	-0.82	-0.95	-0.92
37	-1.19	-0.72	-0.70	-0.67
38	-1.13	-0.63	-0.46	-0.44
39	-1.06	-0.54	-0.24	-0.22
40	-0.98	-0.46	-0.04	-0.02
41	-0.90	-0.38	0.13	0.15
42	-0.81	-0.32	0.28	0.29
43	-0.73	-0.25	0.40	0.41
44	-0.63	-0.20	0.48	0.48
45	-0.53	-0.15	0.52	0.52
46	-0.43	-0.11	0.52	0.51

Table XXI. Trim Coil 2 Average Fields (gauss).

R	B(M100)	B(M200)	B(M300)	B(M400)
0	270.92	262.81	236.79	193.00
1	270.30	263.08	235.99	192.66
2	268.40	261.47	233.13	192.13
3	265.78	256.50	229.76	189.08
4	263.03	252.50	227.43	186.20
5	260.72	250.64	227.69	186.15
6	355.05	245.16	223.40	183.69
7	241.62	233.36	212.92	173.46
8	214.87	207.56	189.97	153.78
9	171.70	164.48	150.34	122.55
10	117.84	111.09	99.79	77.43
11	67.31	61.92	53.08	34.97
12	30.77	25.51	18.10	5.44
13	12.16	6.30	-1.07	-9.41
14	4.20	-3.34	-9.00	-15.31
15	-2.48	-5.13	-11.42	-15.59
16	-5.17	-6.42	-12.36	-15.18
17	-5.04	-7.29	-12.24	-14.31
18	-5.31	-7.93	-12.25	-14.07
19	-5.09	-8.31	-12.05	-13.90
20	-4.50	-8.47	-11.71	-13.67
21	-3.68	-8.43	-11.28	-13.24
22	-2.76	-8.21	-10.81	-12.46
23	-2.63	-7.86	-10.69	-11.78
24	-2.57	-7.39	-10.60	-11.05
25	-2.55	-6.83	-10.53	-10.29
26	-2.57	-6.23	-10.47	-9.51
27	-2.60	-5.60	-10.42	-8.74
28	-2.62	-4.98	-10.36	-8.00
29	-2.38	-4.70	-10.24	-7.57
30	-2.11	-4.47	-10.11	-7.20
31	-1.82	-4.28	-9.94	-6.88
32	-1.51	-4.14	-9.74	-6.60
33	-1.20	-4.02	-9.50	-6.33
34	-0.89	-3.92	-9.21	-6.09
35	-0.59	-3.84	-8.88	-5.84
36	-0.32	-3.77	-8.50	-5.58
37	-0.30	-3.65	-7.83	-5.04
38	-0.30	-3.53	-7.10	-4.47
39	-0.33	-3.39	-6.35	-3.90
40	-0.38	-3.24	-5.57	-3.33
41	-0.44	-3.07	-4.79	-2.77
42	-0.49	-2.88	-4.02	-2.24
43	-0.54	-2.66	-3.28	-1.74
44	-0.57	-2.41	-2.57	-1.28
45	-0.58	-2.12	-1.92	-0.87
46	-0.56	-1.79	-1.34	-0.53

Table XXII. Trim Coil 3 Average Fields (gauss).

R	B(M100)	B(M200)	B(M300)	B(M400)
0	248.71	235.85	205.28	162.00
1	246.01	235.74	204.17	160.96
2	244.15	234.00	202.32	159.58
3	242.92	232.00	200.24	158.20
4	242.11	230.00	198.50	157.15
5	241.49	229.19	197.61	156.75
6	240.84	229.11	200.59	158.25
7	239.77	228.95	203.53	160.34
8	238.70	228.36	205.46	162.84
9	236.80	227.00	205.43	165.53
10	233.20	224.13	201.50	163.78
11	222.18	211.66	192.95	159.56
12	199.86	192.08	172.71	144.60
13	160.27	153.05	137.03	112.23
14	112.52	103.03	89.69	71.77
15	63.44	54.45	41.84	27.09
16	29.13	18.49	8.39	-3.26
17	9.33	-0.59	-10.72	-19.47
18	0.59	-11.07	-18.32	-24.33
19	-3.40	-13.83	-20.86	-25.85
20	-4.84	-13.89	-21.50	-25.00
21	-5.38	-13.49	-21.42	-23.74
22	-5.26	-12.84	-20.81	-22.17
23	-5.24	-12.95	-20.28	-20.65
24	-5.09	-12.30	-19.66	19.08
25	-4.84	-12.00	-18.95	-17.49
26	-4.52	-11.75	-18.17	-15.89
27	-4.13	-11.50	-17.33	-14.30
28	-3.72	-10.50	-16.45	-12.76
29	-3.48	-10.00	-15.63	-11.39
30	-3.24	-9.50	-14.80	-10.10
31	-3.01	-9.00	-13.96	-8.88
32	-2.78	-8.00	-13.11	-7.74
33	-2.57	-7.00	-12.26	-6.70
34	-2.37	-6.00	-11.41	-5.74
35	-2.18	-5.26	-10.58	-4.89
36	-2.00	-3.63	-9.75	-4.14
37	-1.90	-3.18	-9.03	-3.85
38	-1.82	-2.87	-8.33	-3.66
39	-1.74	-2.68	-7.65	-3.54
40	-1.66	-2.57	-6.97	-3.47
41	-1.58	-2.52	-6.29	-3.42
42	-1.49	-2.51	-5.62	-3.37
43	-1.39	-2.49	-4.96	-3.29
44	-1.28	-2.44	-4.28	-3.16
45	-1.14	-2.34	-3.60	-2.96
46	-0.98	-2.15	-2.91	-2.66

Table XXIII. Trim Coil 4 Average Fields (gauss).

R	B(M100)	B(M200)	B(M300)	B(M400)
0	224.37	204.00	180.00	128.35
1	223.63	204.13	178.50	125.74
2	222.63	203.50	177.00	123.80
3	221.48	202.38	175.44	122.58
4	220.30	201.02	173.60	122.18
5	219.22	199.71	171.62	122.66
6	218.92	199.62	172.31	124.96
7	218.74	199.73	173.36	127.96
8	218.55	199.94	174.57	131.36
9	218.26	200.17	175.78	134.89
10	217.74	200.38	176.64	138.32
11	216.93	200.25	177.45	141.26
12	216.13	199.75	179.17	143.66
13	214.06	198.22	178.91	144.49
14	209.84	195.12	174.72	142.97
15	200.67	184.20	165.43	138.55
16	178.12	162.33	144.92	122.49
17	139.89	125.44	110.05	87.25
18	91.67	76.97	63.78	45.19
19	47.91	33.17	19.04	10.08
20	19.45	3.46	-8.97	-14.43
21	-0.53	-12.79	-21.89	-29.00
22	-4.87	-17.59	-26.90	-32.02
23	-4.98	-20.30	-29.97	-32.71
24	-5.07	-20.20	-31.41	-30.92
25	-5.23	-20.15	-31.50	-27.82
26	-5.68	-20.10	-30.62	-25.82
27	-6.25	-20.05	-28.93	-24.03
28	-6.85	-20.25	26.63	-22.41
29	-6.83	-20.25	-24.77	-20.50
30	-6.60	-19.73	-22.84	-18.59
31	-6.18	-18.77	-20.87	-16.68
32	-5.62	-17.46	-18.88	-14.81
33	-4.94	-15.86	-16.91	-13.00
34	-4.19	-14.07	-14.98	-11.26
35	-3.39	-12.15	-13.12	-9.63
36	-2.59	-10.19	-11.36	-8.12
37	-2.31	-9.34	-10.33	-7.36
38	-2.06	-8.55	-9.42	-6.74
39	-1.85	-7.81	-8.61	-6.23
40	-1.66	-7.10	-7.88	-5.81
41	-1.49	-6.42	-7.20	-5.43
42	-1.34	-5.76	-6.56	-5.09
43	-1.20	-5.11	-5.92	-4.74
44	-1.06	-4.46	-5.28	-4.37
45	-0.92	-3.80	-4.61	-3.94
46	-0.77	-3.12	-3.88	-3.43

Table XXIV. Trim Coil 5 Average Fields (gauss).

R	B(M100)	B(M200)	B(M300)	B(M400)
0	197.53	176.16	145.59	104.06
1	196.31	176.26	144.08	102.45
2	195.57	175.72	142.59	101.56
3	195.17	174.74	141.26	101.28
4	194.98	173.56	140.24	101.50
5	194 88	172.40	139.67	102.10
6	194.27	172.12	140.44	102.64
7	193.68	172.02	141.64	103.48
8	193.15	172.08	143.10	104.65
9	192.76	172.23	144.65	106.18
10	192.25	172.39	145.68	108.24
11	192.11	172.58	146.65	110.64
12	192.51	172.79	147.59	113.36
13	193.62	173.01	148.53	116.36
14	194.00	173.37	149.67	119.95
15	194.50	173.34	150.44	123.05
16	195.00	173.23	151.08	125.53
17	191.20	171.20	149.98	125.94
18	184.14	165.97	146.02	123.16
19	171.77	152.77	133.78	114.19
20	145.42	126.80	108.99	90.85
21	104.80	86.45	69.82	54.41
22	60.95	41.63	26.91	15.39
23	26.37	6.97	-6.81	-15.39
24	5.99	-13.10	-25.76	-31.08
25	-2.10	-21.97	-33.46	-37.57
26	-8.47	-25.72	-36.36	-37.02
27	-10.47	-27.31	-36.81	-35.51
28	-9.59	-27.27	-35.55	-33.34
29	-9 41	-26.66	-34.23	-31.14
30	-8.88	-25.37	-32.45	-28.77
31	-8.07	-23.54	-30.31	-26.29
32	-7.09	-21.36	-27.93	-23.76
33	-6.33	-19.52	-25.69	-21.39
34	-5.55	-17.61	-23.40	-19.07
35	-4.78	-15.68	-21.10	-16.85
36	-4.03	-13.78	-18.83	-14.75
37	-3.33	-11.95	-16.62	-12.80
38	-2.68	-10.23	-14.53	-11.03
39	-2.39	-9.23	-13.08	-9.99
40	-2.18	-8.37	-11.78	-9.14
41	-2.02	-7.62	-10.59	-8.43
42	-1.89	-6.95	-9.49	-7.80
43	-1.79	-6.31	-8.44	-7.20
44	-1.68	-5.68	-7.41	-6.59
45	-1.56	-5.02	-6.37	-5.93
46	-1.40	-4.29	-5.29	-5.15

Table XXV. Trim Coil 6 Average Fields (gauss).

R	B(M100)	B(M200)	B(M300)	B(M400)
0	175.06	152.91	118.46	83.07
1	175.10	150.95	119.20	82.13
2	175.10	149.36	118.95	81.25
3	173.50	148.11	118.04	80.53
4	172.25	147.19	116.81	80.06
5	171.00	146.58	115.62	79.93
6	170.00	146.42	115.86	80.65
7	169.50	146.48	116.40	81.72
8	169.00	146.69	117.15	83.04
9	168.50	146.97	118.03	84.54
10	168.00	147.14	118.82	85.90
11	167.75	147.28	119.62	87.36
12	167.75	147.37	120.40	88.92
13	168.14	147.39	121.14	90.57
14	168.93	147.04	121.37	92.49
15	169.69	146.67	121.66	94.45
16	170.32	146.35	122.16	96.38
17	170.73	146.17	123.00	98.23
18	170.90	146.36	125.50	100.44
19	170.51	146.54	126.28	101.41
20	169.36	146.63	124.05	100.44
21	166.76	143.39	121.82	99.53
22	154.16	132.79	113.64	96.46
23	137.97	113.29	94.61	79.37
24	101.39	82.77	65.46	46.90
25	62.94	50.81	26.82	14.50
26	28.81	4.19	-10.81	-19.45
27	6.85	-16.33	-30.08	-34.50
28	-7.38	-25.50	-38.66	-42.20
29	-9.29	-29.25	-40.94	-41.30
30	-9.83	-29.13	-39.95	-39.57
31	-9.50	-26.89	-36.66	-37.26
32	-9.35	-26.18	-32.49	-34.79
33	-9.01	-25.66	-27.66	-32.12
34	-8.50	-25.27	-22.71	-29.31
35	-7.59	-24.23	-19.93	-26.45
36	-6.51	-22.99	-17.86	-23.60
37	-5.34	-21.57	-16.34	-20.81
38	-4.17	-20.01	-15.25	-18.17
39	-3.06	-18.33	-14.45	-15.72
40	-2.67	-16.56	-13.25	-14.25
41	-2.43	-14.73	-12.13	-13.02
42	-2.29	-12.86	-11.05	-11.95
43	-2.21	-10.99	-9.98	-10.96
44	-2.15	-9.14	-8.89	-9.98
45	-2.08	-7.33	-7.74	-8.93
46	-1.94	-5.60	-6.50	-7.74

Table XXVI. Trim Coil 7 Average Fields (gauss).

R	B(M100)	B(M200)	B(M300)	B(M400)
0	152.15	126.09	95.80	66.90
1	149.84	123.86	94.63	66.50
2	148.53	122.42	93.56	66.75
3	147.98	121.62	92.67	66.00
4	147.90	121.30	92.00	64.00
5	148.04	121.29	91.62	63.50
6	147.32	121.13	91.97	63.00
7	146.61	121.09	92.58	63.25
8	145.94	121.12	93.34	63.75
9	145.39	121.19	94.17	64.25
10	145.21	121.16	94.74	65.63
11	145.16	121.14	95.27	66.60
12	145.20	121.13	95.77	67.82
13	145.29	121.14	96.25	69.19
14	145.30	121.17	96.63	70.23
15	145.34	121.23	97.02	71.31
16	145.43	121.33	97.42	72.43
17	145.58	121.46	97.86	73.61
18	145.96	121.91	98.66	74.95
19	146.37	122.28	99.43	76.34
20	146.74	122.48	100.09	77.75
21	147.04	122.38	100.52	79.15
22	147.66	122.03	100.94	80.93
23	147.19	120.87	100.36	81.84
24	145.01	118.60	98.32	81.40
25	135.61	111.38	91.64	75.63
26	119.15	94.26	75.51	62.60
27	87.63	63.75	46.92	36.78
28	53.23	28.38	12.84	5.49
29	22.37	-2.99	-15.71	-17.92
30	4.33	-20.01	-30.91	-32.43
31	-5.50	-28.70	-36.02	-37.50
32	-8.36	-29.85	-37.74	-37.00
33	-8.76	-27.87	-34.99	-33.43
34	-7.48	-23.88	-29.40	-28.00
35	-3.07	-21.18	-25.90	-24.53
36	-0.95	-18.68	-22.79	-21.63
37	-0.63	-16.39	-20.06	-19.23
38	-1.60	-14.32	-17.68	-17.26
39	-3.35	-12.47	-15.62	-15.62
40	-2.95	-11.21	-14.07	-14.15
41	-2.63	-10.15	-12.76	-12.87
42	-2.39	-9.23	-11.61	-11.73
43	-2.18	-8.40	-10.56	-10.65
44	-2.00	-7.59	-9.54	-9.59
45	-1.81	-6.75	-8.47	-8.47
46	-1.59	-5.82	-7.29	-7.24

Table XXVII. Trim Coil 8 Average Fields (gauss).

R	B(M100)	B(M200)	B(M300)	B(M400)
0	129.01	99.15	74.67	51.16
1	127.56	100.11	74.33	51.45
2	126.69	100.05	73.74	51.29
3	126.28	99.29	72.99	50.81
4	126.15	98.12	72.20	50.17
5	126.15	96.84	71.46	49.52
6	125.70	96.58	71.12	49.36
7	125.26	96.47	70.92	49.34
8	124.84	96.48	70.85	49.47
9	124.49	96.57	70.91	49.74
10	124.30	96.60	71.04	50.27
11	124.18	96.68	71.30	50.92
12	124.12	96.81	71.70	51.64
13	124.10	96.99	72.24	52.40
14	124.11	97.29	73.20	53.06
15	124.15	97.63	74.21	53.72
16	124.23	97.97	75.19	54.37
17	124.34	98.30	76.04	55.02
18	124.46	98.50	76.15	55.55
19	124.63	98.68	76.14	56.11
20	124.85	98.83	76.14	56.74
21	125.15	98.97	76.25	57.48
22	125.63	99.01	77.37	58.87
23	126.17	99.09	78.51	60.25
24	126.71	99.28	79.47	61.45
25	127.22	99.64	80.06	62.31
26	127.67	100.22	80.06	62.68
27	125.09	96.99	76.29	61.49
28	117.81	89.38	69.86	57.32
29	101.94	73.72	54.47	44.44
30	74.95	46.94	28.32	20.30
31	43.42	15.08	0.82	-1.45
32	18.18	-6.79	-19.65	-22.00
33	5.93	-14.92	-28.22	-29.76
34	-0.97	-20.33	-30.62	-29.50
35	-2.54	-21.20	-28.98	-27.59
36	-1.17	-19.19	-25.13	-24.00
37	-1.75	-17.33	-22.79	-21.95
38	-2.50	-14.97	-20.68	-20.24
39	-3.28	-12.38	-18.76	-18.76
40	-3.44	-11.00	-16.97	-17.12
41	-3.40	-9.92	-15.29	-15.51
42	-3.19	-9.06	-13.70	-13.91
43	-2.85	-8.34	-12.15	-12.31
44	-2.42	-7.66	-10.62	-10.71
45	-1.93	-6.96	-9.07	-9.07
46	-1.43	-6.14	-7.48	-7.39

Table XXVIII. Valley Coil First Harmonic (gauss).

R	H1(M100)	H1(M300)
0	0.00	0.00
1	0.00	0.00
2	0.00	-0.01
3	-0.01	-0.02
4	-0.03	-0.03
5	-0.05	-0.05
6	-0.07	-0.06
7	-0.10	-0.06
8	-0.13	-0.06
9	-0.16	-0.04
10	-0.20	-0.02
11	-0.34	0.02
12	-0.43	0.08
13	-0.45	0.16
14	-0.38	0.28
15	-0.17	0.43
16	0.15	0.60
17	0.55	0.78
18	1.07	1.06
19	1.61	1.37
20	2.09	1.71
21	2.55	2.19
22	3.03	2.72
23	3.51	3.14
24	3.96	3.62
25	4.43	4.10
26	4.74	4.54
27	4.79	4.81
28	4.57	4.83
29	3.90	4.35
30	3.06	3.64
31	2.18	2.87
32	1.51	2.05
33	0.96	1.42
34	0.60	0.82
35	0.39	0.31
36	0.24	-0.13
37	0.13	-0.46
38	0.05	-0.66
39	-0.02	-0.74
40	-0.06	-0.73
41	-0.07	-0.65
42	-0.07	-0.52
43	-0.05	-0.35
44	-0.03	-0.17
45	0.00	0.00
46	0.00	0.00