



HARP Collaboration

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Analysis of HARP TPC krypton data

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Abstract

This memo describes the procedure which was adopted to equalize the response of the 3972 pads of the HARP TPC, using radioactive $^{83\text{m}}\text{Kr}$ gas. The results obtained from the study of reconstructed krypton clusters in the calibration data taken in 2002 are reported. Two complementary methods were employed in the data analysis. Compatible results were obtained for channel-to-channel equalization constants. An estimate of the overall systematic uncertainty was derived.

1 Introduction

The large-angle tracking device of the HARP experiment consists of a cylindrical Time Projection Chamber (TPC) with ~ 1.5 m length and ~ 0.8 m diameter, filled with a 91% Ar and 9% CH₄ gas mixture. A description of the TPC and of the HARP experiment in general can be found elsewhere [1]. In the TPC, the 110 V/cm electric field forces the ionization charge to drift in a 0.7 T solenoidal magnetic field towards the upstream end-plate where it is multiplied, collected, amplified and time-sampled.

To achieve optimal spatial and energy resolution, the 3972 TPC pads require precise calibration of amplitude response. The method that has been chosen for the HARP TPC is the analysis of the pad response to the ionization charge produced by ^{83m}Kr decays (the method has been used before by ALEPH [2], DELPHI [3] and NA49 [4]). Radioactive ^{83m}Kr gas is produced by a ⁸³Rb source which is located in a bypass of the TPC input gas line. The krypton gas diffuses into the TPC volume where it decays, producing clusters of low-energy electrons. The data is then collected with a random trigger and analysed.

2 The ^{83m}Kr spectrum

The ^{83m}Kr isotope decays mainly into γ rays, with a lifetime of 1.86 hours. Due to a high probability of internal γ conversion and emission of Auger electrons, however, most of the γ energy is transferred to electrons. The electrons remain trapped in the TPC magnetic field and produce clusters of ionization charge with negligible dimensions compared to the pad size.

Once the charge reaches the upstream end-plate, it is multiplied and spread over several pads (typically 4 to 10 in krypton events), according to the pad response function. The ^{83m}Kr peaks are reconstructed and used to equalize the response of individual pads according to the methods discussed in the subsequent section.

The ^{83m}Kr spectrum expected from Monte Carlo simulations of the ALICE TPC [5] is shown in Fig. 1. The largest peak corresponds to the full-energy 41.6 keV transition. Additional peaks (which are either direct, or escape peaks) show up at 9.4, 12.6 and 29 keV.

3 The data analysis

The use of radioactive krypton to equalize the pad response of the HARP TPC faces two major difficulties:

1. the spectrum is not monochromatic;
2. the ionization charge produced by a single krypton decay is spread over several pads.

Two different methods have been developed and implemented in the data analysis, which represent some degree of complementarity.

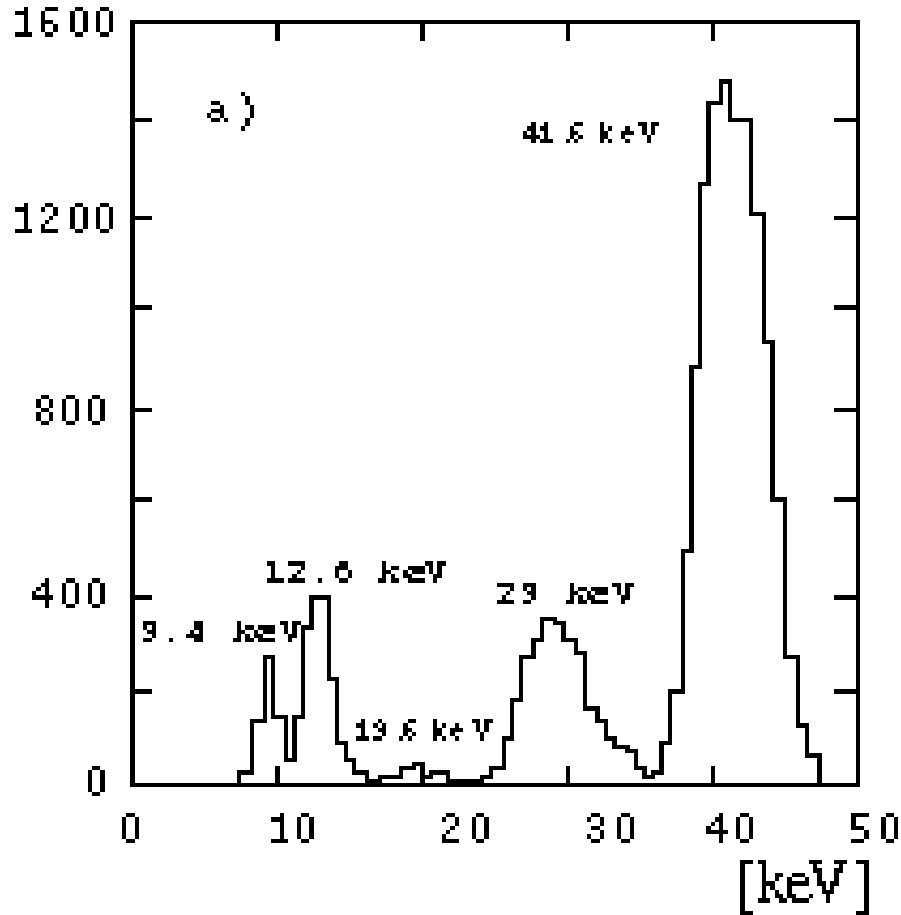


Figure 1: Spectrum of $^{83\text{m}}\text{Kr}$ decays from a Monte Carlo simulation of the ALICE TPC.

3.1 The leader-pad method

The first method applied in the analysis of krypton data is based on a multiple-step procedure which requires the complete reconstruction of krypton clusters¹. On the one hand, the complete cluster reconstruction facilitates the separation of genuine krypton decays from noise events. On the other hand, the method is sensitive to the malfunction (or mis-equalization) of any pad participating in the charge collection and is problematic in regions adjacent to dead areas or to detector edges.

In more detail, the leader-pad method proceeds as follows:

1. krypton clusters are identified and reconstructed; the charge collected by each pad in the cluster (defined as the sum over all time slots of the digitized amplitudes) is recorded;
2. among the reconstructed clusters, those corresponding to the highest energy peak at 41.6 keV are roughly selected by cutting on pad multiplicity ($n_{\text{pad}} \geq 4$) and cluster total energy ($E_{\text{clust}} \geq 2500$ ADC counts);

¹The method was developed with U. Gastaldi, member of the HARP Collaboration.

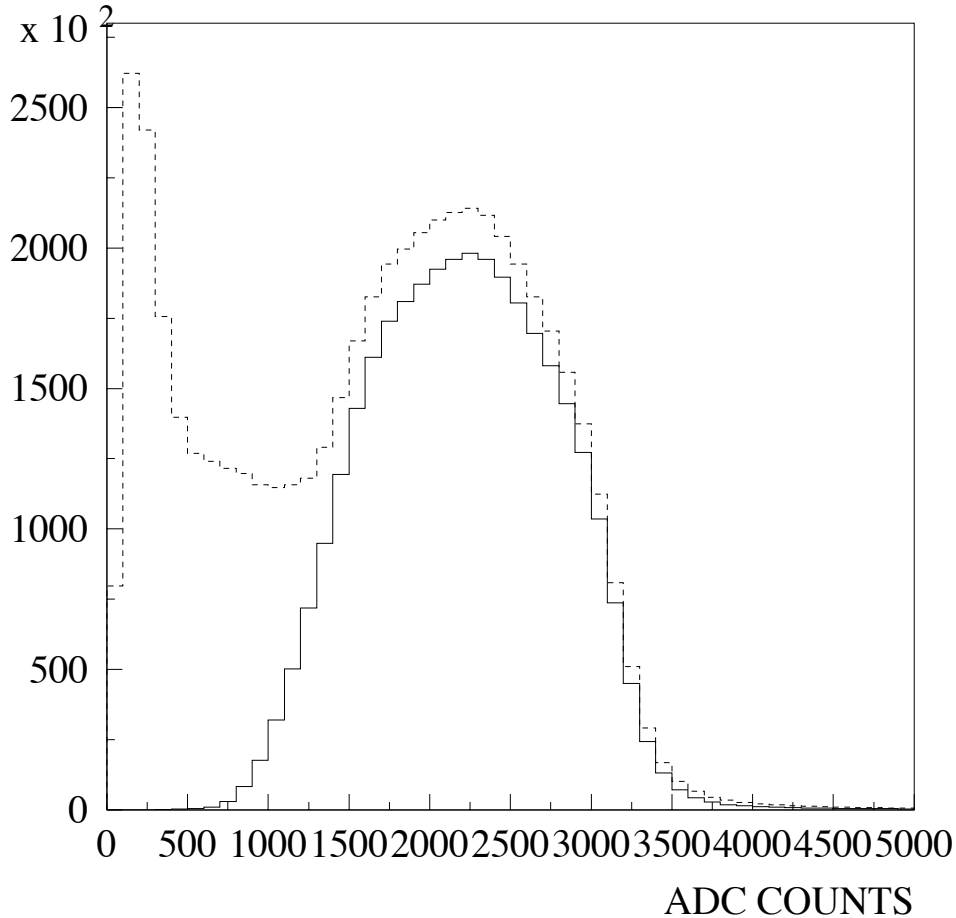


Figure 2: Spectrum summed over all leader pads, before (dashed line) and after (full line) the cluster selection based on pad multiplicity and total released energy.

3. the pad with the largest signal within a cluster (the ‘leader pad’) is selected; each time a pad is a leader pad, a pad-specific histogram is filled with its signal;
4. the mean values of the spectra observed in these histograms serve as estimate of the pad response²; the RMS of the distribution divided by the square root of the number of entries serves as an estimate of the statistical uncertainty of the pad response;
5. the mean values of all such histograms are equalized by means of multiplicative factors which represent the ‘equalization constants’ of the pads.

The summed spectra of all leader pads is shown in Fig. 2, before and after applying the cluster selection.

3.2 The democratic method

The leader-pad method provides an unbiased estimation of the channel equalization only when the krypton cluster is correctly reconstructed; it can be significantly biased when the

²An alternative estimator, based on the median instead of the mean has also been tried, with similar results.

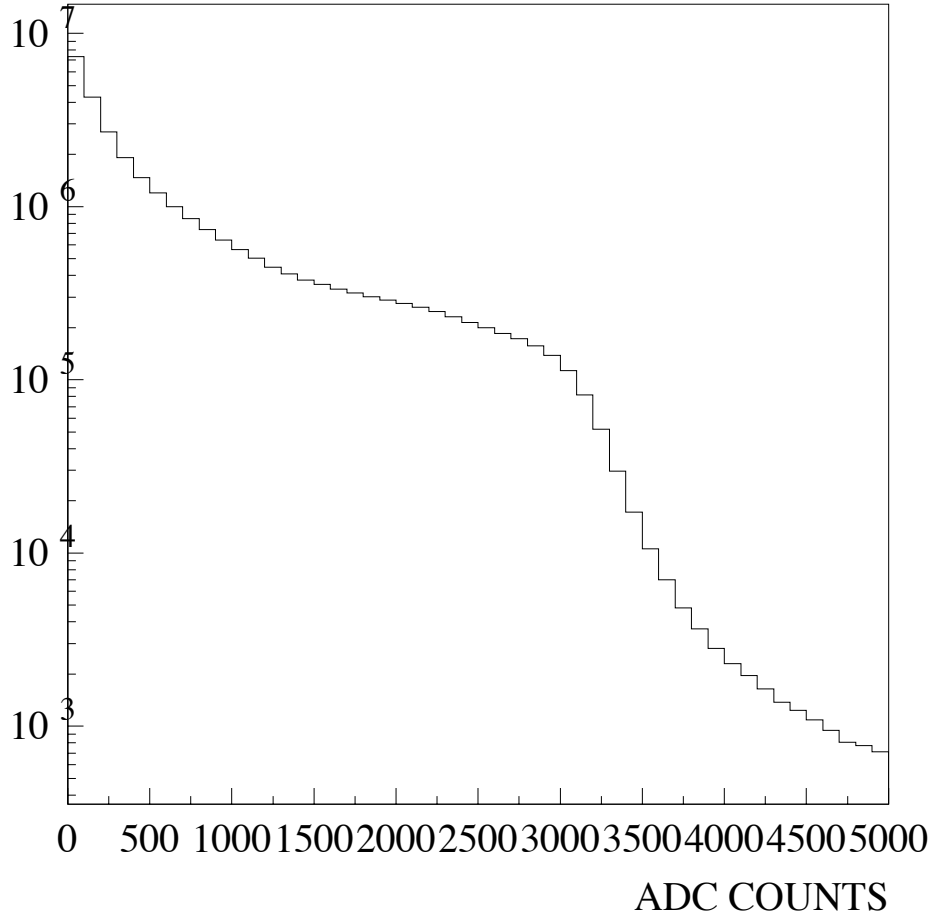


Figure 3: Spectrum summed over all pads.

cluster is incompletely reconstructed, because of dead pads or chamber edges. In such cases the leader pad can be wrongly selected, i.e. a non-leader pad can be falsely identified as the leader pad because the real maximum of the cluster is missed. Inevitably, this produces a bias in the determination of the pad response.

In order to study this bias a complementary method has been developed which does not require any cluster reconstruction nor any pad selection inside the cluster. Rather, the procedure is based on the analysis of krypton spectra as seen by individual pads.

Due to the pad response function, only a fraction of the charge produced in the $^{83\text{m}}\text{Kr}$ decay is collected by single pads and the spectrum does not show the typical multi-peak structure of fully reconstructed krypton decays. However, since all pads have the same geometrical coverage, the spectral shape is still expected to be identical for all pads. Therefore, they can be used for pad equalization.

In practice, the presence of noise can significantly alter the spectrum in the low-energy region.

The single-pad spectrum summed over all pads is shown in Fig. 3.

The ideal estimator should provide a measurement of the pad response by ignoring the low-energy part of the spectrum, without introducing a bias. The following ‘truncated cubic

mean' estimator for the i .th pad was chosen:

$$A_i = \left(\frac{\sum_j E_{ij}^3}{N} \right)^{\frac{1}{3}},$$

where $j=1,\dots,N$ identifies the events having deposited energy E_{ij} above a fixed cut of 600 ADC counts in the i .th pad. Other estimators, with different powers of E_{ij} , have also been investigated, such as truncated quadratic or quartic means, which provide a different weight of large-energy deposits. Similar results were obtained.

After determining the numerical value of the estimator in each pad, the pad response is corrected for mis-equalization and the procedure is repeated. The existence of a fixed threshold does not produce a bias if the procedure is iterated sufficiently often. In our case the procedure was applied nine times, after which the calibration constants reached a stability better than 0.1%.

4 Data selection and processing

Four krypton calibration runs were taken during the operation of the HARP experiment:

1. one calibration run took place in October 2001, with approximately 1 million selected krypton clusters;
2. a second run, with approximately 5 million selected krypton clusters, took place in November 2001, at the end of the first year of operation;
3. a third run took place in July 2002, during the second year of operation, with approximately 2 million selected krypton clusters;
4. a fourth and final run took place in October 2002, at the end of the data taking, producing approximately 5 million selected krypton clusters.

Between the first and the third calibration run, the activity of the source decreased by a factor 20, given the 86 days lifetime of the ^{83}Rb source. For the fourth run, a new source was used. In addition, at the beginning of 2002, i.e. between the second and the third calibration run, the TPC chamber voltages were re-adjusted to increase the chamber gain, so the two sets of equalization constants for 2001 and 2002 are not directly comparable. For this reason, and for the fact that the most important part of the HARP physics data was taken in 2002, only the last two calibration runs have been considered in this paper. No difference between the results from the two runs in 2002 were observed. The results reported here refer to the combined data from both runs.

Before analysing the krypton spectrum the data were processed with a special version of the HARP software which contains a correction for the cross-talk affecting the TPC readout. For the motivation and a detailed description of the cross-talk correction method, and its implementation, we refer to [6].

Although the cross-talk can affect the reconstructed krypton spectrum, its effect on the determination of the pad equalization constants is small, since (i) the average effect of cross-talk is small [7], and (ii) primarily large signals (which are relatively little affected by cross-talk) are taken into account. However, strictly speaking, this is true only for uni-directional and bi-directional crosstalk since only these two crosstalk categories are corrected by the crosstalk algorithm applied, while self-crosstalk is, by design, not altered. In case of a crosstalk correction which corrects also for self-crosstalk, the pad equalization constants presented in this paper would not apply. For a more detailed discussion of these features we refer to Ref. [7].

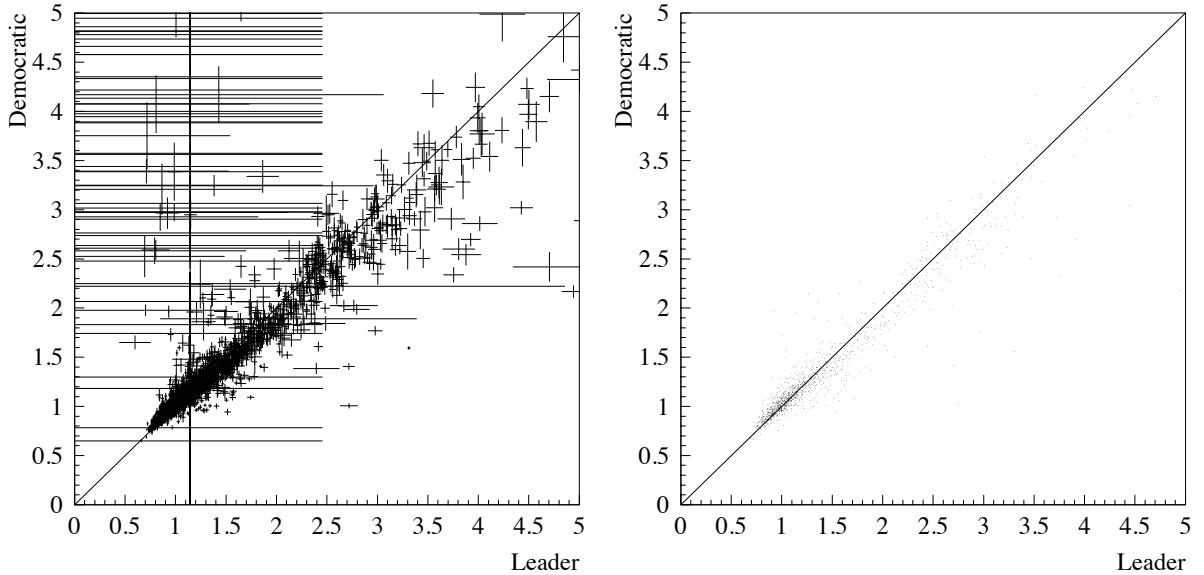


Figure 4: Correlation between the calibration constants obtained with the two methods described in the text. Left: all channels, with statistical uncertainties. Right: only channels with statistical uncertainty smaller than 4% for both methods, without statistical uncertainties.

5 Results

The two sets of pad equalization constants obtained with the leader-pad and democratic methods are plotted in Fig. 4 against each other. The correlation for all pads, with the associated statistical uncertainty, is shown in the left part of the figure. When only channels with statistical uncertainty smaller than 4% for both methods are selected, the plot in the right part of the figure is obtained (where the error bars have been removed, for clarity).

The statistical uncertainty of the pad equalization constants is typically 1% on average for the leader-pad method and 2.5% for the democratic method (see the left part of Fig. 5). For some pathological channels the uncertainty can be much larger. The spread between the two sets of constants is at the level of 5% (see the right part of Fig. 5).

On the basis of the observed distributions, the total uncertainty (statistical and systematic)

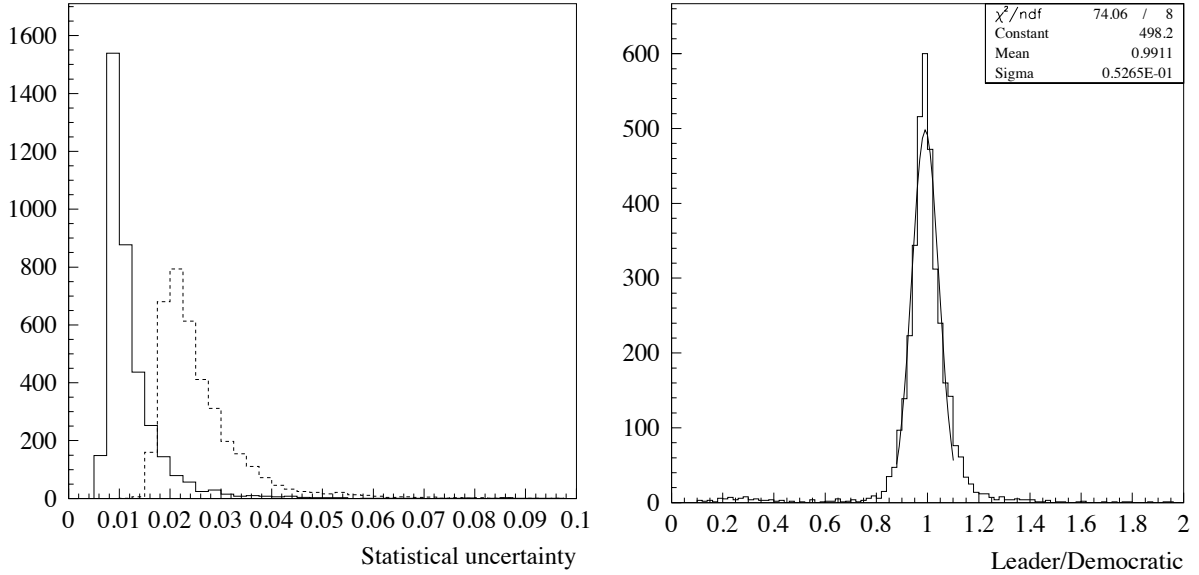


Figure 5: Left: Distribution of the statistical uncertainties of the calibration constants for the leader-pad (continuous line) and democratic (dashed line) methods. Right: ratio between values of the calibration constants obtained with the two methods.

of the final set of calibration constants should be better than 5%.³

An example of a krypton spectrum collected by the HARP TPC in a region where the chamber shows excellent resolution and where no dead pads are present, is shown in the left part of Fig. 6. All main peaks of the krypton decay chain are visible and well separated although the spectrum is not corrected for temperature and pressure variations that occurred during data taking which lasted several hours. The plot demonstrates that the TPC is capable of providing an intrinsic energy resolution of order 10%.

When one looks at the pads of the whole TPC, the spectrum deteriorates significantly due to the presence of dead pads, residual mis-calibration and noise. The resulting plot, obtained by superimposing all krypton energy spectra collected in the TPC, is shown in Fig. 6 (right). This result leaves no hope of separating pions from protons by dE/dx in the relativistic-rise domain (which is not a severe handicap since the RPC's around the TPC provide that separation [8]).

6 Final set of pad equalization constants

Since leader-pad constants are statistically more precise, by default the leader-pad approach is chosen as the reference method. However, with a view to providing the best possible set of calibration constants, the values obtained with the democratic method are used in the following cases:

1. when the statistical uncertainty of the leader-pad method is larger than the one of the democratic method;

³The initial channel-to-channel spread in gain, before any equalization, is approximately 22%.

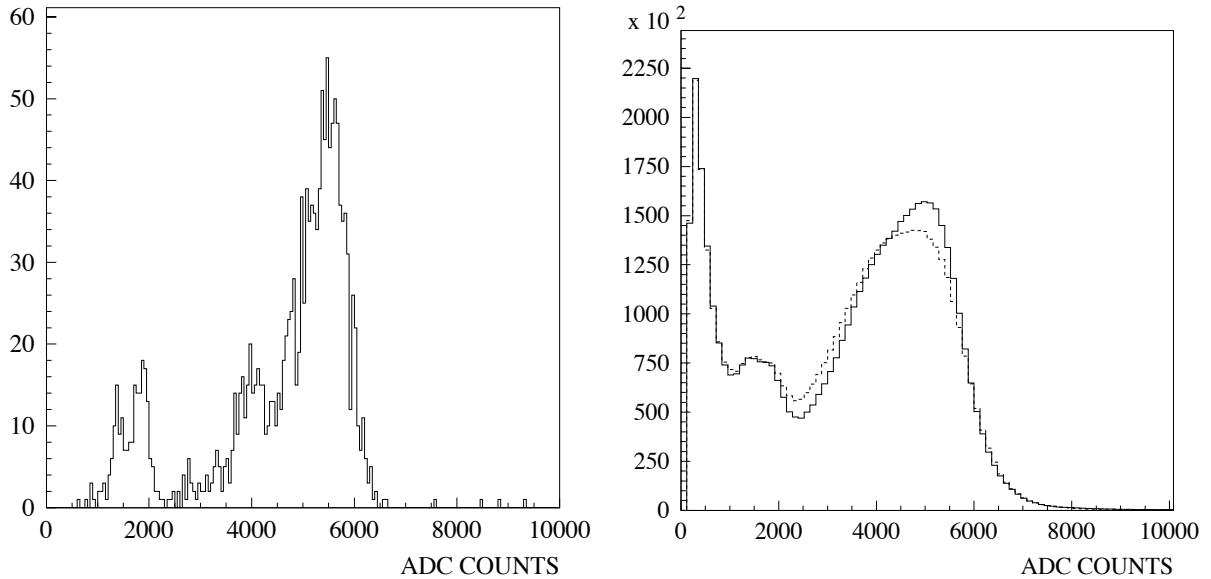


Figure 6: Left: a krypton spectrum collected in a favourable region of the HARP TPC. Right: the krypton spectrum obtained by superimposing the signal from all pads using leader-pad (continuous line) and democratic (dashed line) calibration constants.

2. when the pad belongs to the first or last pad row;
3. when the pad is the first or the last pad of a row, i.e. is closest to the TPC spokes;
4. when the pad is the neighbour of a ‘dead’ pad in the same row.

The overall relative normalization between the constants from the leader-pad method and the democratic method is obtained from the comparison of responses from the bulk of pads where the constant from the leader-pad method was retained.

The thus obtained final set of pad equalization constants is shown in Fig. 9 separately for the six TPC sectors. Out of a total of 3972 pads, 147 pads (3.7%) are ‘dead’. 3382 pads (85%) have a pad equalization constant between 0.5 and 1.5.

The final pad equalization constants are available in ASCII format at the location

<http://cern.ch/dydak/kryptonCalib.ca>

and are also printed in the Appendix of this memo.

There is one more set of pad equalization constants: from the pulser data. As has been discussed earlier [6], poor correlation between pulser constants and krypton constants (leader-pad method) was diagnosed. This is conjectured to arise from preamplifier non-linearity and from imperfections in the pedestal subtraction of the ADC counts.

The constants from the krypton analysis presented here are closer to ‘physics’ than are pulser constants. Therefore, we retain solely the krypton constants for physics analysis.

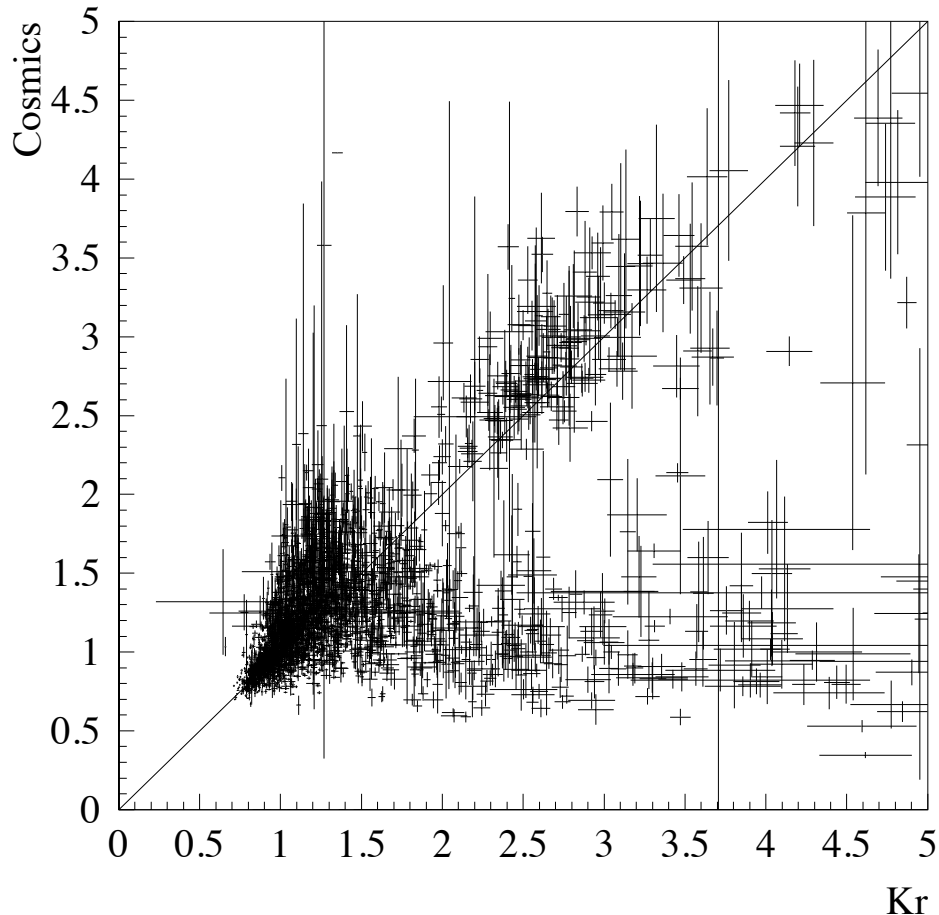


Figure 7: Comparison between the pad calibration constants obtained with krypton events and cosmic events; the plotted uncertainties are statistical only.

7 Comparison of krypton and cosmic-muon results

The TPC pads can also be equalized using cosmic muons. The comparison between the equalization constants obtained from krypton and cosmic-muon events [9] is shown in Fig. 7. The following comments are in order:

1. a good correlation is observed for the majority of pads, taking into account the generally larger statistical uncertainty of the cosmic-muon calibration;
2. the points significantly off the diagonal line correspond to channels with a particularly large uncertainty in the cosmic-muon calibration; by selecting pads which have an uncertainty of the cosmic-muon calibration smaller than 2%, a better agreement is obtained between the two methods (see the left part of Fig. 8); this indicates that the cosmic-muon uncertainty is dominating in the comparison;
3. some events above the diagonal line represent pads belonging to the outer pad row of the TPC, for which edge effects different for krypton events and cosmic-muon events exist (see the right part of Fig. 8); we note that this systematic effect does not deteriorate the precision of azimuthal cluster coordinates;

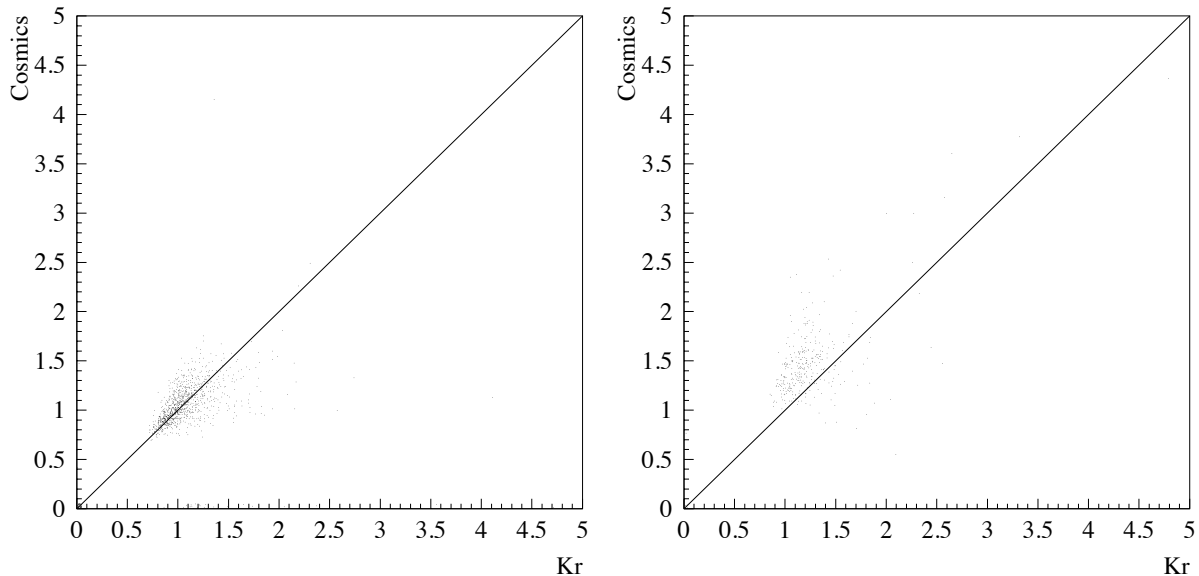


Figure 8: Left: Comparison between the pad calibration constants obtained with krypton events and cosmic-muon events, restricted to channels whose uncertainty of the cosmics calibration is smaller than 2%. Right: same as the left plot, but restricted to channels in the outermost pad row.

4. we are not aware of a compelling explanation of the residual spread between the pad equalization constants from the krypton and cosmic-muon calibrations; we conjecture that it is due to preamplifier non-linearities, given that the energy range of krypton events is typically one order of magnitude larger than that of minimum ionizing particles.

8 Conclusions

The use of radioactive $^{83\text{m}}\text{Kr}$ gas has proven to be a fast and efficient method to determine and correct for channel-to-channel gain variations in the HARP TPC. A set of constants has been provided which presents a statistical accuracy of 1% on average. An estimate of the systematic uncertainty has been obtained by comparing the results of two complementary methods of analyzing krypton events. We estimate that the total uncertainty on the pad-to-pad equalization constants is less than 5% on average. A comparison between the results obtained with krypton events and those obtained with high-energy cosmic muons shows consistent results, although the significance of the comparison is limited by the cosmics statistics. The residual spread between krypton and cosmics constants is conjectured to arise from non-linearities in the pad response. A final set of krypton constants is presented which is retained for physics analysis.

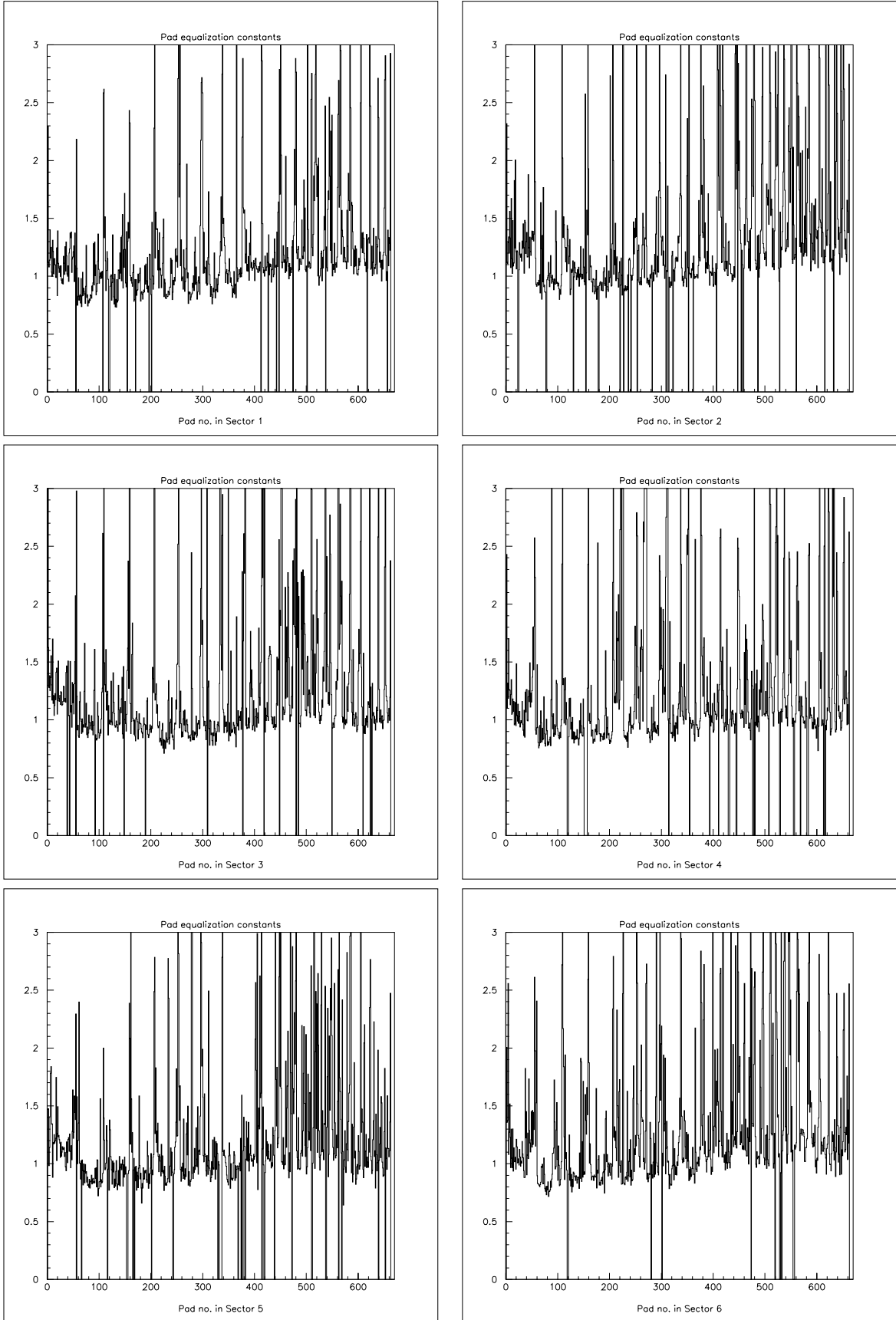


Figure 9: Final pad equalization constants for the six TPC sectors.

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- [7] F. Dydak *et al.*, Performance of TPC crosstalk correction, HARP Memo 04-101, <http://cern.ch/dydak/crosstalk4.ps>.
- [8] G. Barr *et al.*, Performance of multigap RPC detectors in the HARP experiment, Proc. RPC'2003 Conference, Clermont-Ferrand (France), October 2003 (to appear in Nucl. Instr. Meth. A).
- [9] Pad calibration constants from cosmic-muon events were first obtained by A. Lundborg; they were later refined by M. Chizhov who provided the set of constants used in this paper.

Appendix: Final pad equalization constants

SECTOR 1 Absolute pad number - Row - Relative pad number - Constant

1 20 1 2.297	2 20 2 1.121	3 20 3 1.080	4 20 4 1.139
5 20 5 1.400	6 20 6 1.160	7 20 7 1.250	8 20 8 1.035
9 20 9 1.000	10 20 10 1.311	11 20 11 1.216	12 20 12 1.020
13 20 13 1.152	14 20 14 1.150	15 20 15 1.099	16 20 16 0.993
17 20 17 0.989	18 20 18 1.245	19 20 19 0.832	20 20 20 1.392
21 20 21 1.113	22 20 22 1.069	23 20 23 1.033	24 20 24 1.086
25 20 25 1.000	26 20 26 1.090	27 20 27 0.966	28 20 28 0.939
29 20 29 0.978	30 20 30 0.934	31 20 31 1.173	32 20 32 1.111
33 20 33 1.016	34 20 34 1.256	35 20 35 1.044	36 20 36 1.296
37 20 37 1.176	38 20 38 1.019	39 20 39 1.001	40 20 40 1.090
41 20 41 0.955	42 20 42 1.201	43 20 43 1.237	44 20 44 1.373
45 20 45 1.333	46 20 46 1.381	47 20 47 1.033	48 20 48 1.149
49 20 49 1.166	50 20 50 1.211	51 20 51 1.262	52 20 52 0.954
53 20 53 1.374	54 20 54 1.089	55 20 55 0.000	56 19 1 2.183
57 19 2 1.069	58 19 3 0.749	59 19 4 0.827	60 19 5 0.988
61 19 6 0.792	62 19 7 0.828	63 19 8 0.841	64 19 9 0.770
65 19 10 0.980	66 19 11 0.738	67 19 12 0.830	68 19 13 1.035
69 19 14 0.834	70 19 15 0.896	71 19 16 0.868	72 19 17 0.847
73 19 18 0.766	74 19 19 0.914	75 19 20 1.267	76 19 21 0.817
77 19 22 0.840	78 19 23 0.743	79 19 24 0.788	80 19 25 0.770
81 19 26 0.803	82 19 27 0.790	83 19 28 0.840	84 19 29 0.832
85 19 30 0.810	86 19 31 0.917	87 19 32 0.874	88 19 33 0.944
89 19 34 1.283	90 19 35 0.925	91 19 36 1.296	92 19 37 1.005
93 19 38 1.099	94 19 39 0.839	95 19 40 0.867	96 19 41 0.937
97 19 42 1.131	98 19 43 1.366	99 19 44 1.059	100 19 45 0.938
101 19 46 0.996	102 19 47 1.027	103 19 48 0.978	104 19 49 1.035
105 19 50 0.986	106 19 51 1.043	107 19 52 0.000	108 19 53 2.585
109 18 1 2.617	110 18 2 1.334	111 18 3 1.514	112 18 4 1.134
113 18 5 0.876	114 18 6 1.049	115 18 7 1.214	116 18 8 1.153
117 18 9 0.973	118 18 10 0.000	119 18 11 0.000	120 18 12 0.000
121 18 13 0.913	122 18 14 1.000	123 18 15 1.012	124 18 16 0.793
125 18 17 0.947	126 18 18 1.359	127 18 19 0.979	128 18 20 0.820
129 18 21 0.760	130 18 22 1.017	131 18 23 0.737	132 18 24 0.799
133 18 25 0.732	134 18 26 0.971	135 18 27 0.776	136 18 28 0.791
137 18 29 1.054	138 18 30 1.054	139 18 31 0.978	140 18 32 1.201
141 18 33 1.027	142 18 34 1.336	143 18 35 0.960	144 18 36 1.349
145 18 37 1.534	146 18 38 0.897	147 18 39 1.230	148 18 40 1.077
149 18 41 1.716	150 18 42 1.232	151 18 43 0.942	152 18 44 0.909
153 18 45 1.385	154 18 46 0.000	155 18 47 1.302	156 18 48 1.465
157 18 49 1.329	158 18 50 2.433	159 17 1 2.325	160 17 2 1.004
161 17 3 0.962	162 17 4 0.990	163 17 5 0.941	164 17 6 0.912
165 17 7 1.031	166 17 8 1.102	167 17 9 0.783	168 17 10 0.797
169 17 11 0.972	170 17 12 0.000	171 17 13 0.970	172 17 14 0.835
173 17 15 0.877	174 17 16 0.883	175 17 17 1.019	176 17 18 0.943
177 17 19 0.961	178 17 20 1.026	179 17 21 1.071	180 17 22 0.785
181 17 23 0.857	182 17 24 0.868	183 17 25 0.844	184 17 26 0.801
185 17 27 0.858	186 17 28 0.881	187 17 29 0.863	188 17 30 1.092
189 17 31 0.931	190 17 32 1.106	191 17 33 0.960	192 17 34 0.891
193 17 35 1.163	194 17 36 0.863	195 17 37 0.915	196 17 38 0.000
197 17 39 1.191	198 17 40 1.186	199 17 41 0.973	200 17 42 0.842

201	17	43	0.000	202	17	44	1.467	203	17	45	1.003	204	17	46	0.887
205	17	47	0.933	206	17	48	2.282	207	16	1	4.040	208	16	2	1.157
209	16	3	1.555	210	16	4	1.410	211	16	5	1.404	212	16	6	1.411
213	16	7	1.054	214	16	8	1.223	215	16	9	0.898	216	16	10	1.377
217	16	11	1.054	218	16	12	1.068	219	16	13	1.010	220	16	14	0.901
221	16	15	1.008	222	16	16	1.113	223	16	17	1.334	224	16	18	1.494
225	16	19	0.824	226	16	20	0.973	227	16	21	0.942	228	16	22	0.812
229	16	23	0.806	230	16	24	0.845	231	16	25	0.824	232	16	26	0.825
233	16	27	0.873	234	16	28	0.864	235	16	29	0.839	236	16	30	0.906
237	16	31	0.905	238	16	32	1.156	239	16	33	1.025	240	16	34	1.139
241	16	35	0.799	242	16	36	0.862	243	16	37	0.965	244	16	38	0.925
245	16	39	0.990	246	16	40	0.959	247	16	41	1.231	248	16	42	1.241
249	16	43	1.128	250	16	44	1.174	251	16	45	1.079	252	16	46	2.707
253	15	1	3.850	254	15	2	1.684	255	15	3	1.968	256	15	4	3.756
257	15	5	1.090	258	15	6	1.315	259	15	7	0.962	260	15	8	0.979
261	15	9	0.994	262	15	10	0.888	263	15	11	1.229	264	15	12	1.072
265	15	13	0.869	266	15	14	0.953	267	15	15	1.061	268	15	16	1.240
269	15	17	1.969	270	15	18	0.986	271	15	19	1.029	272	15	20	0.765
273	15	21	0.865	274	15	22	0.849	275	15	23	0.861	276	15	24	0.794
277	15	25	0.820	278	15	26	0.840	279	15	27	0.853	280	15	28	0.940
281	15	29	0.903	282	15	30	1.003	283	15	31	0.876	284	15	32	1.208
285	15	33	1.338	286	15	34	0.930	287	15	35	1.079	288	15	36	0.944
289	15	37	0.801	290	15	38	0.865	291	15	39	0.960	292	15	40	0.995
293	15	41	0.941	294	15	42	0.843	295	15	43	1.438	296	15	44	2.175
297	14	1	2.674	298	14	2	2.716	299	14	3	2.584	300	14	4	1.413
301	14	5	1.026	302	14	6	1.380	303	14	7	1.029	304	14	8	1.078
305	14	9	1.064	306	14	10	0.941	307	14	11	1.132	308	14	12	0.921
309	14	13	0.933	310	14	14	1.163	311	14	15	1.731	312	14	16	1.105
313	14	17	1.012	314	14	18	0.931	315	14	19	0.825	316	14	20	0.912
317	14	21	0.844	318	14	22	0.761	319	14	23	0.816	320	14	24	0.896
321	14	25	0.865	322	14	26	1.201	323	14	27	0.982	324	14	28	0.812
325	14	29	0.886	326	14	30	0.880	327	14	31	0.980	328	14	32	0.864
329	14	33	0.928	330	14	34	1.016	331	14	35	1.005	332	14	36	1.033
333	14	37	1.175	334	14	38	1.300	335	14	39	1.686	336	14	40	1.221
337	14	41	2.747	338	13	1	3.899	339	13	2	1.455	340	13	3	1.502
341	13	4	1.334	342	13	5	1.264	343	13	6	1.113	344	13	7	0.945
345	13	8	1.037	346	13	9	1.057	347	13	10	1.022	348	13	11	0.936
349	13	12	1.012	350	13	13	1.051	351	13	14	1.152	352	13	15	1.038
353	13	16	0.947	354	13	17	0.987	355	13	18	0.920	356	13	19	0.917
357	13	20	0.818	358	13	21	0.893	359	13	22	0.857	360	13	23	1.042
361	13	24	0.848	362	13	25	0.922	363	13	26	0.933	364	13	27	0.813
365	13	28	3.309	366	13	29	1.073	367	13	30	0.953	368	13	31	0.978
369	13	32	1.015	370	13	33	1.057	371	13	34	1.021	372	13	35	0.993
373	13	36	1.074	374	13	37	0.995	375	13	38	1.026	376	13	39	2.201
377	12	1	2.882	378	12	2	1.590	379	12	3	1.545	380	12	4	1.572
381	12	5	1.412	382	12	6	1.114	383	12	7	1.191	384	12	8	1.402
385	12	9	1.046	386	12	10	1.103	387	12	11	1.042	388	12	12	1.170
389	12	13	0.966	390	12	14	1.286	391	12	15	1.184	392	12	16	1.471
393	12	17	1.075	394	12	18	1.119	395	12	19	1.051	396	12	20	1.065
397	12	21	1.075	398	12	22	1.136	399	12	23	1.110	400	12	24	0.961
401	12	25	1.146	402	12	26	1.158	403	12	27	1.088	404	12	28	1.062
405	12	29	1.065	406	12	30	1.034	407	12	31	1.033	408	12	32	1.084
409	12	33	1.045	410	12	34	1.116	411	12	35	1.122	412	12	36	0.000
413	12	37	3.860	414	11	1	2.861	415	11	2	1.455	416	11	3	1.077
417	11	4	1.029	418	11	5	1.053	419	11	6	1.001	420	11	7	1.174
421	11	8	1.052	422	11	9	1.050	423	11	10	1.080	424	11	11	1.200

425	11	12	1.120	426	11	13	0.000	427	11	14	1.359	428	11	15	1.011
429	11	16	1.107	430	11	17	1.083	431	11	18	1.102	432	11	19	0.949
433	11	20	1.057	434	11	21	1.062	435	11	22	1.153	436	11	23	0.996
437	11	24	1.017	438	11	25	1.324	439	11	26	1.204	440	11	27	1.078
441	11	28	1.093	442	11	29	0.000	443	11	30	1.381	444	11	31	1.083
445	11	32	1.555	446	11	33	1.642	447	11	34	0.000	448	10	1	2.787
449	10	2	1.709	450	10	3	3.045	451	10	4	2.047	452	10	5	1.118
453	10	6	1.072	454	10	7	1.121	455	10	8	1.264	456	10	9	1.182
457	10	10	1.119	458	10	11	1.141	459	10	12	1.032	460	10	13	2.037
461	10	14	1.045	462	10	15	1.123	463	10	16	1.249	464	10	17	1.161
465	10	18	1.087	466	10	19	0.977	467	10	20	1.111	468	10	21	1.004
469	10	22	1.076	470	10	23	1.031	471	10	24	1.059	472	10	25	1.254
473	10	26	1.307	474	10	27	0.000	475	10	28	1.349	476	10	29	1.469
477	10	30	2.097	478	10	31	1.616	479	10	32	2.881	480	9	1	2.763
481	9	2	1.201	482	9	3	1.150	483	9	4	1.230	484	9	5	1.257
485	9	6	1.044	486	9	7	1.058	487	9	8	1.152	488	9	9	1.123
489	9	10	1.104	490	9	11	1.104	491	9	12	1.486	492	9	13	1.173
493	9	14	1.151	494	9	15	1.252	495	9	16	1.832	496	9	17	1.215
497	9	18	1.589	498	9	19	1.056	499	9	20	1.041	500	9	21	1.088
501	9	22	0.000	502	9	23	6.282	503	9	24	1.404	504	9	25	1.078
505	9	26	1.125	506	9	27	1.112	507	9	28	1.066	508	9	29	1.077
509	9	30	2.528	510	8	1	2.754	511	8	2	1.249	512	8	3	1.176
513	8	4	1.361	514	8	5	1.868	515	8	6	1.654	516	8	7	1.986
517	8	8	2.743	518	8	9	3.178	519	8	10	1.964	520	8	11	1.687
521	8	12	1.949	522	8	13	1.002	523	8	14	2.021	524	8	15	0.922
525	8	16	0.989	526	8	17	1.003	527	8	18	1.065	528	8	19	1.196
529	8	20	1.217	530	8	21	0.960	531	8	22	1.164	532	8	23	1.072
533	8	24	1.224	534	8	25	1.516	535	8	26	1.400	536	8	27	2.472
537	7	1	0.000	538	7	2	1.254	539	7	3	1.075	540	7	4	1.045
541	7	5	1.578	542	7	6	1.736	543	7	7	1.660	544	7	8	2.547
545	7	9	1.864	546	7	10	1.224	547	7	11	2.254	548	7	12	1.115
549	7	13	2.392	550	7	14	1.002	551	7	15	1.104	552	7	16	1.059
553	7	17	1.063	554	7	18	1.286	555	7	19	1.033	556	7	20	1.101
557	7	21	1.118	558	7	22	1.079	559	7	23	1.165	560	7	24	1.768
561	7	25	2.398	562	6	1	2.693	563	6	2	1.595	564	6	3	1.698
565	6	4	4.028	566	6	5	2.950	567	6	6	1.192	568	6	7	1.569
569	6	8	1.398	570	6	9	1.342	571	6	10	1.124	572	6	11	1.124
573	6	12	1.250	574	6	13	1.162	575	6	14	1.123	576	6	15	1.128
577	6	16	1.065	578	6	17	1.571	579	6	18	1.260	580	6	19	1.121
581	6	20	1.889	582	6	21	1.654	583	6	22	1.567	584	6	23	3.203
585	5	1	2.454	586	5	2	1.091	587	5	3	1.638	588	5	4	1.613
589	5	5	1.385	590	5	6	1.235	591	5	7	1.021	592	5	8	1.224
593	5	9	1.084	594	5	10	1.262	595	5	11	1.091	596	5	12	1.236
597	5	13	1.021	598	5	14	1.021	599	5	15	1.009	600	5	16	1.058
601	5	17	1.156	602	5	18	1.094	603	5	19	1.125	604	5	20	2.498
605	4	1	3.471	606	4	2	1.243	607	4	3	1.372	608	4	4	1.203
609	4	5	1.379	610	4	6	1.329	611	4	7	1.197	612	4	8	1.147
613	4	9	1.092	614	4	10	1.120	615	4	11	1.039	616	4	12	1.362
617	4	13	0.000	618	4	14	1.069	619	4	15	1.321	620	4	16	1.332
621	4	17	1.285	622	4	18	3.068	623	3	1	2.472	624	3	2	1.059
625	3	3	1.070	626	3	4	1.261	627	3	5	1.005	628	3	6	1.120
629	3	7	1.415	630	3	8	1.020	631	3	9	1.075	632	3	10	1.066
633	3	11	1.100	634	3	12	1.342	635	3	13	1.275	636	3	14	1.021
637	3	15	1.254	638	3	16	2.711	639	2	1	2.371	640	2	2	1.322
641	2	3	1.121	642	2	4	1.210	643	2	5	1.077	644	2	6	1.138
645	2	7	0.959	646	2	8	1.139	647	2	9	1.061	648	2	10	1.183

649	2	11	1.204	650	2	12	1.589	651	2	13	2.697	652	1	1	2.906
653	1	2	1.180	654	1	3	0.964	655	1	4	1.039	656	1	5	0.000
657	1	6	1.399	658	1	7	1.090	659	1	8	1.334	660	1	9	1.287
661	1	10	1.226	662	1	11	2.926								

SECTOR 2 Absolute pad number - Row - Relative pad number - Constant

1	20	1	2.319	2	20	2	1.121	3	20	3	1.109	4	20	4	1.293
5	20	5	1.340	6	20	6	1.199	7	20	7	1.560	8	20	8	1.330
9	20	9	1.075	10	20	10	1.673	11	20	11	1.150	12	20	12	1.025
13	20	13	1.481	14	20	14	1.088	15	20	15	1.114	16	20	16	1.826
17	20	17	1.244	18	20	18	2.005	19	20	19	1.210	20	20	20	1.063
21	20	21	1.219	22	20	22	1.209	23	20	23	0.000	24	20	24	0.000
25	20	25	1.056	26	20	26	1.290	27	20	27	1.185	28	20	28	1.165
29	20	29	1.193	30	20	30	1.130	31	20	31	1.304	32	20	32	1.240
33	20	33	1.452	34	20	34	1.249	35	20	35	1.026	36	20	36	1.483
37	20	37	1.464	38	20	38	1.196	39	20	39	1.299	40	20	40	1.378
41	20	41	1.165	42	20	42	1.167	43	20	43	1.878	44	20	44	1.245
45	20	45	1.071	46	20	46	1.338	47	20	47	1.211	48	20	48	1.180
49	20	49	1.332	50	20	50	1.390	51	20	51	1.315	52	20	52	1.389
53	20	53	1.304	54	20	54	1.363	55	20	55	4.770	56	19	1	1.816
57	19	2	1.156	58	19	3	0.928	59	19	4	0.912	60	19	5	0.943
61	19	6	0.943	62	19	7	0.921	63	19	8	0.965	64	19	9	0.928
65	19	10	1.013	66	19	11	0.855	67	19	12	1.637	68	19	13	1.237
69	19	14	0.801	70	19	15	1.351	71	19	16	0.952	72	19	17	1.766
73	19	18	0.909	74	19	19	0.923	75	19	20	0.864	76	19	21	0.862
77	19	22	0.000	78	19	23	0.000	79	19	24	0.970	80	19	25	0.987
81	19	26	1.003	82	19	27	1.120	83	19	28	0.965	84	19	29	0.910
85	19	30	1.026	86	19	31	1.179	87	19	32	0.991	88	19	33	0.939
89	19	34	1.009	90	19	35	0.974	91	19	36	0.952	92	19	37	0.882
93	19	38	0.978	94	19	39	0.967	95	19	40	0.931	96	19	41	1.566
97	19	42	1.300	98	19	43	0.938	99	19	44	0.949	100	19	45	0.914
101	19	46	0.940	102	19	47	0.893	103	19	48	0.801	104	19	49	0.883
105	19	50	0.844	106	19	51	0.917	107	19	52	1.016	108	19	53	3.578
109	18	1	2.021	110	18	2	1.334	111	18	3	1.513	112	18	4	1.447
113	18	5	1.322	114	18	6	1.248	115	18	7	1.124	116	18	8	1.247
117	18	9	1.039	118	18	10	1.439	119	18	11	1.406	120	18	12	1.262
121	18	13	1.109	122	18	14	1.173	123	18	15	1.318	124	18	16	0.841
125	18	17	0.888	126	18	18	1.061	127	18	19	1.033	128	18	20	1.047
129	18	21	1.134	130	18	22	0.000	131	18	23	0.995	132	18	24	1.122
133	18	25	1.074	134	18	26	1.031	135	18	27	1.028	136	18	28	0.970
137	18	29	1.003	138	18	30	1.058	139	18	31	0.990	140	18	32	1.078
141	18	33	0.912	142	18	34	1.020	143	18	35	0.994	144	18	36	1.258
145	18	37	1.019	146	18	38	0.975	147	18	39	1.016	148	18	40	0.979
149	18	41	1.237	150	18	42	1.080	151	18	43	0.953	152	18	44	0.926
153	18	45	2.574	154	18	46	0.000	155	18	47	1.030	156	18	48	1.571
157	18	49	1.359	158	18	50	3.770	159	17	1	1.929	160	17	2	0.969
161	17	3	0.970	162	17	4	1.180	163	17	5	1.082	164	17	6	1.088
165	17	7	0.951	166	17	8	0.949	167	17	9	0.864	168	17	10	0.979
169	17	11	0.972	170	17	12	0.914	171	17	13	0.849	172	17	14	0.869
173	17	15	0.974	174	17	16	1.051	175	17	17	0.800	176	17	18	0.889
177	17	19	0.913	178	17	20	0.000	179	17	21	0.000	180	17	22	0.920
181	17	23	0.941	182	17	24	0.954	183	17	25	0.925	184	17	26	0.878
185	17	27	0.946	186	17	28	0.878	187	17	29	0.874	188	17	30	1.038
189	17	31	1.075	190	17	32	0.936	191	17	33	0.920	192	17	34	0.987

193	17	35	0.815	194	17	36	1.177	195	17	37	0.909	196	17	38	0.885
197	17	39	0.870	198	17	40	1.047	199	17	41	0.946	200	17	42	0.988
201	17	43	2.733	202	17	44	1.233	203	17	45	0.915	204	17	46	0.920
205	17	47	1.281	206	17	48	3.543	207	16	1	1.999	208	16	2	1.018
209	16	3	1.223	210	16	4	1.099	211	16	5	1.457	212	16	6	0.961
213	16	7	1.149	214	16	8	1.167	215	16	9	0.979	216	16	10	0.978
217	16	11	0.906	218	16	12	1.032	219	16	13	1.127	220	16	14	0.000
221	16	15	0.924	222	16	16	1.158	223	16	17	1.008	224	16	18	0.837
225	16	19	4.038	226	16	20	4.952	227	16	21	0.000	228	16	22	0.890
229	16	23	0.875	230	16	24	0.919	231	16	25	0.890	232	16	26	0.876
233	16	27	0.912	234	16	28	0.887	235	16	29	1.013	236	16	30	0.000
237	16	31	1.142	238	16	32	1.156	239	16	33	1.139	240	16	34	1.007
241	16	35	0.000	242	16	36	1.008	243	16	37	0.967	244	16	38	1.005
245	16	39	1.071	246	16	40	1.470	247	16	41	1.194	248	16	42	1.415
249	16	43	1.335	250	16	44	1.500	251	16	45	1.343	252	16	46	4.738
253	15	1	0.000	254	15	2	0.967	255	15	3	1.224	256	15	4	1.270
257	15	5	0.949	258	15	6	0.927	259	15	7	0.991	260	15	8	0.954
261	15	9	0.924	262	15	10	1.062	263	15	11	1.271	264	15	12	1.543
265	15	13	1.424	266	15	14	1.271	267	15	15	0.987	268	15	16	1.331
269	15	17	1.321	270	15	18	4.041	271	15	19	1.260	272	15	20	0.942
273	15	21	0.984	274	15	22	0.963	275	15	23	0.928	276	15	24	0.966
277	15	25	0.908	278	15	26	1.015	279	15	27	0.982	280	15	28	1.021
281	15	29	1.093	282	15	30	0.000	283	15	31	0.957	284	15	32	1.031
285	15	33	0.962	286	15	34	1.053	287	15	35	1.189	288	15	36	1.019
289	15	37	1.364	290	15	38	1.685	291	15	39	0.994	292	15	40	1.173
293	15	41	1.039	294	15	42	1.034	295	15	43	1.738	296	15	44	3.637
297	14	1	1.981	298	14	2	1.678	299	14	3	1.340	300	14	4	1.181
301	14	5	1.304	302	14	6	1.347	303	14	7	1.092	304	14	8	1.219
305	14	9	1.098	306	14	10	0.981	307	14	11	1.084	308	14	12	2.739
309	14	13	0.000	310	14	14	1.048	311	14	15	1.040	312	14	16	1.780
313	14	17	0.000	314	14	18	0.000	315	14	19	0.993	316	14	20	0.904
317	14	21	0.907	318	14	22	0.952	319	14	23	0.920	320	14	24	1.176
321	14	25	1.217	322	14	26	0.000	323	14	27	1.057	324	14	28	1.047
325	14	29	0.957	326	14	30	1.072	327	14	31	1.152	328	14	32	1.166
329	14	33	1.129	330	14	34	1.159	331	14	35	1.130	332	14	36	1.347
333	14	37	1.288	334	14	38	1.345	335	14	39	1.675	336	14	40	1.713
337	14	41	4.817	338	13	1	1.696	339	13	2	1.071	340	13	3	0.964
341	13	4	0.998	342	13	5	0.915	343	13	6	0.946	344	13	7	0.982
345	13	8	1.039	346	13	9	1.211	347	13	10	0.980	348	13	11	0.909
349	13	12	1.870	350	13	13	2.362	351	13	14	1.073	352	13	15	0.000
353	13	16	4.066	354	13	17	1.029	355	13	18	1.014	356	13	19	1.022
357	13	20	0.987	358	13	21	1.065	359	13	22	1.053	360	13	23	1.112
361	13	24	0.000	362	13	25	1.174	363	13	26	1.015	364	13	27	0.981
365	13	28	0.997	366	13	29	0.991	367	13	30	0.999	368	13	31	1.016
369	13	32	1.011	370	13	33	0.983	371	13	34	1.092	372	13	35	1.655
373	13	36	1.163	374	13	37	1.132	375	13	38	1.355	376	13	39	4.297
377	12	1	1.708	378	12	2	1.786	379	12	3	1.379	380	12	4	1.335
381	12	5	2.645	382	12	6	2.183	383	12	7	1.159	384	12	8	1.462
385	12	9	1.028	386	12	10	1.118	387	12	11	1.070	388	12	12	1.216
389	12	13	1.065	390	12	14	1.712	391	12	15	1.097	392	12	16	1.040
393	12	17	0.922	394	12	18	1.032	395	12	19	1.042	396	12	20	1.027
397	12	21	1.005	398	12	22	1.176	399	12	23	1.070	400	12	24	0.912
401	12	25	0.931	402	12	26	1.033	403	12	27	1.031	404	12	28	0.926
405	12	29	1.108	406	12	30	0.000	407	12	31	1.064	408	12	32	5.457
409	12	33	2.784	410	12	34	1.866	411	12	35	1.569	412	12	36	5.634
413	12	37	9.885	414	11	1	2.474	415	11	2	1.510	416	11	3	1.116

417	11	4	1.127	418	11	5	3.848	419	11	6	2.607	420	11	7	1.251
421	11	8	1.057	422	11	9	1.045	423	11	10	1.129	424	11	11	1.456
425	11	12	1.065	426	11	13	1.131	427	11	14	1.010	428	11	15	1.003
429	11	16	1.293	430	11	17	1.305	431	11	18	1.105	432	11	19	1.107
433	11	20	1.100	434	11	21	1.023	435	11	22	1.023	436	11	23	0.953
437	11	24	1.013	438	11	25	0.971	439	11	26	1.007	440	11	27	1.084
441	11	28	0.991	442	11	29	2.923	443	11	30	3.719	444	11	31	1.753
445	11	32	1.975	446	11	33	9.951	447	11	34	0.000	448	10	1	2.839
449	10	2	1.916	450	10	3	2.168	451	10	4	1.590	452	10	5	1.398
453	10	6	1.284	454	10	7	0.000	455	10	8	1.225	456	10	9	1.100
457	10	10	0.000	458	10	11	0.000	459	10	12	1.068	460	10	13	1.448
461	10	14	1.271	462	10	15	1.670	463	10	16	4.007	464	10	17	4.497
465	10	18	1.498	466	10	19	1.302	467	10	20	1.299	468	10	21	1.069
469	10	22	1.234	470	10	23	1.394	471	10	24	1.048	472	10	25	1.411
473	10	26	1.409	474	10	27	2.531	475	10	28	2.466	476	10	29	1.778
477	10	30	1.687	478	10	31	4.843	479	10	32	10.985	480	9	1	2.517
481	9	2	1.139	482	9	3	1.111	483	9	4	1.058	484	9	5	1.080
485	9	6	1.349	486	9	7	0.000	487	9	8	1.357	488	9	9	0.992
489	9	10	1.068	490	9	11	1.198	491	9	12	1.387	492	9	13	1.398
493	9	14	1.968	494	9	15	2.552	495	9	16	2.978	496	9	17	1.282
497	9	18	1.245	498	9	19	1.198	499	9	20	1.144	500	9	21	1.161
501	9	22	1.211	502	9	23	1.089	503	9	24	1.796	504	9	25	1.680
505	9	26	1.614	506	9	27	1.747	507	9	28	1.448	508	9	29	2.165
509	9	30	7.364	510	8	1	2.584	511	8	2	1.523	512	8	3	1.666
513	8	4	1.578	514	8	5	1.080	515	8	6	1.413	516	8	7	1.109
517	8	8	1.056	518	8	9	1.392	519	8	10	1.832	520	8	11	2.939
521	8	12	2.457	522	8	13	1.949	523	8	14	1.960	524	8	15	2.568
525	8	16	4.233	526	8	17	1.070	527	8	18	0.956	528	8	19	0.000
529	8	20	1.554	530	8	21	1.077	531	8	22	1.252	532	8	23	1.229
533	8	24	1.386	534	8	25	1.603	535	8	26	1.902	536	8	27	4.952
537	7	1	2.875	538	7	2	1.743	539	7	3	1.214	540	7	4	1.220
541	7	5	1.238	542	7	6	1.317	543	7	7	1.462	544	7	8	1.253
545	7	9	2.302	546	7	10	2.456	547	7	11	2.076	548	7	12	1.637
549	7	13	2.103	550	7	14	3.147	551	7	15	3.586	552	7	16	1.143
553	7	17	1.110	554	7	18	2.116	555	7	19	1.444	556	7	20	1.146
557	7	21	1.163	558	7	22	1.189	559	7	23	1.330	560	7	24	0.000
561	7	25	5.438	562	6	1	2.670	563	6	2	1.955	564	6	3	2.558
565	6	4	2.379	566	6	5	1.745	567	6	6	1.256	568	6	7	2.065
569	6	8	1.207	570	6	9	1.289	571	6	10	1.093	572	6	11	2.086
573	6	12	1.284	574	6	13	1.173	575	6	14	1.193	576	6	15	1.520
577	6	16	1.204	578	6	17	2.461	579	6	18	1.328	580	6	19	1.174
581	6	20	1.634	582	6	21	2.101	583	6	22	2.020	584	6	23	4.196
585	5	1	2.961	586	5	2	1.560	587	5	3	1.366	588	5	4	1.046
589	5	5	1.124	590	5	6	1.631	591	5	7	1.285	592	5	8	1.146
593	5	9	1.140	594	5	10	1.612	595	5	11	1.221	596	5	12	1.109
597	5	13	1.668	598	5	14	1.404	599	5	15	1.338	600	5	16	1.323
601	5	17	1.394	602	5	18	1.073	603	5	19	1.425	604	5	20	4.181
605	4	1	2.889	606	4	2	1.487	607	4	3	1.466	608	4	4	1.418
609	4	5	1.167	610	4	6	1.930	611	4	7	1.379	612	4	8	1.117
613	4	9	1.116	614	4	10	1.227	615	4	11	0.000	616	4	12	1.170
617	4	13	3.004	618	4	14	1.344	619	4	15	1.265	620	4	16	1.399
621	4	17	1.712	622	4	18	4.694	623	3	1	2.653	624	3	2	1.270
625	3	3	1.124	626	3	4	1.817	627	3	5	1.136	628	3	6	1.151
629	3	7	1.062	630	3	8	1.045	631	3	9	1.226	632	3	10	0.000
633	3	11	1.181	634	3	12	3.453	635	3	13	1.275	636	3	14	1.245
637	3	15	1.993	638	3	16	5.894	639	2	1	2.408	640	2	2	1.494

641	2	3	1.317	642	2	4	1.424	643	2	5	1.194	644	2	6	1.014
645	2	7	1.375	646	2	8	3.425	647	2	9	2.597	648	2	10	1.162
649	2	11	1.585	650	2	12	2.347	651	2	13	7.549	652	1	1	2.618
653	1	2	1.394	654	1	3	1.235	655	1	4	1.321	656	1	5	1.190
657	1	6	1.125	658	1	7	1.656	659	1	8	1.562	660	1	9	1.375
661	1	10	2.003	662	1	11	2.833								

SECTOR 3 Absolute pad number - Row - Relative pad number - Constant

1	20	1	3.325	2	20	2	1.625	3	20	3	1.280	4	20	4	1.383
5	20	5	1.253	6	20	6	1.367	7	20	7	1.554	8	20	8	1.301
9	20	9	1.172	10	20	10	1.700	11	20	11	1.143	12	20	12	1.209
13	20	13	1.037	14	20	14	1.123	15	20	15	1.227	16	20	16	1.174
17	20	17	1.412	18	20	18	1.447	19	20	19	1.050	20	20	20	1.166
21	20	21	1.508	22	20	22	1.186	23	20	23	1.158	24	20	24	1.212
25	20	25	1.132	26	20	26	1.244	27	20	27	1.235	28	20	28	1.126
29	20	29	1.132	30	20	30	1.160	31	20	31	1.291	32	20	32	1.286
33	20	33	1.161	34	20	34	1.186	35	20	35	1.153	36	20	36	1.411
37	20	37	1.466	38	20	38	0.000	39	20	39	0.000	40	20	40	1.508
41	20	41	1.040	42	20	42	1.034	43	20	43	0.000	44	20	44	1.506
45	20	45	1.068	46	20	46	1.126	47	20	47	0.937	48	20	48	1.323
49	20	49	1.149	50	20	50	1.304	51	20	51	1.051	52	20	52	1.312
53	20	53	1.504	54	20	54	2.072	55	20	55	0.000	56	19	1	2.978
57	19	2	1.204	58	19	3	0.913	59	19	4	0.953	60	19	5	0.861
61	19	6	0.848	62	19	7	1.157	63	19	8	1.242	64	19	9	1.007
65	19	10	0.988	66	19	11	0.883	67	19	12	1.009	68	19	13	0.897
69	19	14	0.959	70	19	15	0.939	71	19	16	1.247	72	19	17	1.662
73	19	18	0.937	74	19	19	0.964	75	19	20	1.144	76	19	21	0.873
77	19	22	0.938	78	19	23	0.848	79	19	24	0.885	80	19	25	1.043
81	19	26	0.980	82	19	27	0.920	83	19	28	0.951	84	19	29	0.976
85	19	30	1.036	86	19	31	0.912	87	19	32	0.986	88	19	33	0.871
89	19	34	0.953	90	19	35	1.256	91	19	36	1.609	92	19	37	0.000
93	19	38	0.870	94	19	39	0.839	95	19	40	0.825	96	19	41	0.840
97	19	42	1.151	98	19	43	1.032	99	19	44	0.889	100	19	45	0.841
101	19	46	0.862	102	19	47	0.916	103	19	48	0.884	104	19	49	1.007
105	19	50	1.240	106	19	51	1.274	107	19	52	2.611	108	19	53	0.000
109	18	1	3.125	110	18	2	1.494	111	18	3	1.303	112	18	4	1.243
113	18	5	1.608	114	18	6	1.083	115	18	7	1.219	116	18	8	1.248
117	18	9	0.870	118	18	10	1.124	119	18	11	0.968	120	18	12	0.998
121	18	13	0.960	122	18	14	0.986	123	18	15	1.335	124	18	16	0.981
125	18	17	0.957	126	18	18	1.066	127	18	19	1.408	128	18	20	1.153
129	18	21	1.054	130	18	22	0.952	131	18	23	0.937	132	18	24	0.945
133	18	25	0.990	134	18	26	0.961	135	18	27	0.932	136	18	28	0.902
137	18	29	1.298	138	18	30	1.086	139	18	31	0.958	140	18	32	0.970
141	18	33	1.105	142	18	34	1.061	143	18	35	1.182	144	18	36	1.369
145	18	37	0.879	146	18	38	0.841	147	18	39	1.460	148	18	40	0.000
149	18	41	1.003	150	18	42	1.160	151	18	43	0.969	152	18	44	0.903
153	18	45	1.048	154	18	46	1.427	155	18	47	1.620	156	18	48	2.372
157	18	49	1.272	158	18	50	3.215	159	17	1	3.220	160	17	2	1.141
161	17	3	0.881	162	17	4	0.987	163	17	5	1.564	164	17	6	1.837
165	17	7	1.014	166	17	8	0.991	167	17	9	0.876	168	17	10	0.999
169	17	11	0.861	170	17	12	0.819	171	17	13	1.015	172	17	14	1.073
173	17	15	1.002	174	17	16	0.984	175	17	17	0.833	176	17	18	0.915
177	17	19	1.053	178	17	20	0.976	179	17	21	0.968	180	17	22	0.965
181	17	23	0.927	182	17	24	0.896	183	17	25	0.884	184	17	26	0.846

185	17	27	0.948	186	17	28	1.018	187	17	29	0.963	188	17	30	0.960
189	17	31	0.000	190	17	32	0.955	191	17	33	0.916	192	17	34	1.164
193	17	35	1.190	194	17	36	0.876	195	17	37	0.848	196	17	38	0.866
197	17	39	0.916	198	17	40	0.956	199	17	41	0.928	200	17	42	0.891
201	17	43	0.946	202	17	44	0.925	203	17	45	1.455	204	17	46	1.355
205	17	47	1.235	206	17	48	3.228	207	16	1	3.532	208	16	2	1.171
209	16	3	1.223	210	16	4	1.313	211	16	5	1.056	212	16	6	1.131
213	16	7	0.946	214	16	8	0.931	215	16	9	0.949	216	16	10	0.986
217	16	11	0.809	218	16	12	0.842	219	16	13	0.822	220	16	14	0.780
221	16	15	0.911	222	16	16	0.971	223	16	17	0.757	224	16	18	0.830
225	16	19	0.711	226	16	20	0.824	227	16	21	0.813	228	16	22	0.753
229	16	23	0.889	230	16	24	0.844	231	16	25	0.807	232	16	26	0.829
233	16	27	1.170	234	16	28	1.339	235	16	29	0.792	236	16	30	0.843
237	16	31	0.979	238	16	32	1.006	239	16	33	0.884	240	16	34	1.191
241	16	35	0.851	242	16	36	0.863	243	16	37	0.827	244	16	38	0.746
245	16	39	0.919	246	16	40	0.972	247	16	41	0.964	248	16	42	1.171
249	16	43	1.094	250	16	44	1.478	251	16	45	1.489	252	16	46	2.520
253	15	1	3.224	254	15	2	1.461	255	15	3	0.931	256	15	4	1.073
257	15	5	1.248	258	15	6	0.967	259	15	7	0.850	260	15	8	0.897
261	15	9	0.856	262	15	10	1.009	263	15	11	1.076	264	15	12	0.957
265	15	13	1.085	266	15	14	0.906	267	15	15	0.898	268	15	16	0.992
269	15	17	1.003	270	15	18	0.959	271	15	19	0.894	272	15	20	0.843
273	15	21	0.860	274	15	22	0.864	275	15	23	0.848	276	15	24	0.817
277	15	25	0.871	278	15	26	2.445	279	15	27	1.272	280	15	28	0.827
281	15	29	0.904	282	15	30	0.846	283	15	31	0.827	284	15	32	0.896
285	15	33	0.870	286	15	34	0.883	287	15	35	1.032	288	15	36	0.850
289	15	37	0.865	290	15	38	0.970	291	15	39	0.963	292	15	40	0.994
293	15	41	0.923	294	15	42	0.929	295	15	43	1.550	296	15	44	2.134
297	14	1	3.363	298	14	2	1.652	299	14	3	1.861	300	14	4	1.279
301	14	5	1.024	302	14	6	0.949	303	14	7	0.988	304	14	8	0.988
305	14	9	0.906	306	14	10	0.828	307	14	11	0.954	308	14	12	3.296
309	14	13	0.000	310	14	14	1.284	311	14	15	1.336	312	14	16	0.924
313	14	17	0.781	314	14	18	0.998	315	14	19	0.990	316	14	20	0.873
317	14	21	0.887	318	14	22	0.821	319	14	23	0.779	320	14	24	0.889
321	14	25	0.862	322	14	26	0.989	323	14	27	0.926	324	14	28	0.782
325	14	29	0.883	326	14	30	0.816	327	14	31	0.897	328	14	32	0.960
329	14	33	0.985	330	14	34	0.948	331	14	35	0.899	332	14	36	1.315
333	14	37	4.871	334	14	38	5.677	335	14	39	1.646	336	14	40	1.429
337	14	41	2.593	338	13	1	2.947	339	13	2	1.090	340	13	3	1.065
341	13	4	0.889	342	13	5	1.034	343	13	6	0.941	344	13	7	0.946
345	13	8	0.983	346	13	9	0.890	347	13	10	0.903	348	13	11	1.137
349	13	12	4.593	350	13	13	0.818	351	13	14	0.976	352	13	15	0.878
353	13	16	0.862	354	13	17	1.595	355	13	18	0.889	356	13	19	0.913
357	13	20	0.894	358	13	21	0.922	359	13	22	0.979	360	13	23	0.956
361	13	24	0.883	362	13	25	0.936	363	13	26	0.872	364	13	27	0.767
365	13	28	1.892	366	13	29	0.967	367	13	30	0.946	368	13	31	1.079
369	13	32	0.911	370	13	33	1.021	371	13	34	1.033	372	13	35	0.995
373	13	36	1.071	374	13	37	0.917	375	13	38	1.104	376	13	39	2.281
377	12	1	0.000	378	12	2	1.682	379	12	3	2.609	380	12	4	2.267
381	12	5	4.390	382	12	6	3.611	383	12	7	0.949	384	12	8	1.102
385	12	9	0.925	386	12	10	0.932	387	12	11	0.959	388	12	12	1.018
389	12	13	0.930	390	12	14	0.978	391	12	15	1.322	392	12	16	1.765
393	12	17	1.200	394	12	18	1.433	395	12	19	1.269	396	12	20	0.913
397	12	21	0.952	398	12	22	1.165	399	12	23	1.094	400	12	24	0.903
401	12	25	0.945	402	12	26	1.028	403	12	27	1.101	404	12	28	0.937
405	12	29	1.019	406	12	30	1.061	407	12	31	0.971	408	12	32	1.794

409	12	33	1.193	410	12	34	1.125	411	12	35	1.318	412	12	36	1.499
413	12	37	2.157	414	11	1	8.151	415	11	2	2.228	416	11	3	3.941
417	11	4	3.857	418	11	5	0.000	419	11	6	4.314	420	11	7	0.895
421	11	8	1.102	422	11	9	0.995	423	11	10	1.039	424	11	11	1.150
425	11	12	1.028	426	11	13	0.993	427	11	14	1.530	428	11	15	1.553
429	11	16	1.636	430	11	17	1.597	431	11	18	1.565	432	11	19	1.026
433	11	20	0.999	434	11	21	0.965	435	11	22	1.024	436	11	23	0.935
437	11	24	0.941	438	11	25	1.027	439	11	26	0.915	440	11	27	0.959
441	11	28	0.939	442	11	29	1.139	443	11	30	1.542	444	11	31	1.125
445	11	32	1.528	446	11	33	1.432	447	11	34	2.557	448	10	1	0.000
449	10	2	1.946	450	10	3	1.815	451	10	4	4.903	452	10	5	3.180
453	10	6	3.355	454	10	7	0.998	455	10	8	1.110	456	10	9	1.086
457	10	10	1.047	458	10	11	1.066	459	10	12	2.145	460	10	13	1.188
461	10	14	1.504	462	10	15	1.803	463	10	16	1.196	464	10	17	2.272
465	10	18	2.147	466	10	19	1.537	467	10	20	1.128	468	10	21	0.985
469	10	22	1.043	470	10	23	1.033	471	10	24	1.201	472	10	25	1.459
473	10	26	1.103	474	10	27	2.375	475	10	28	1.822	476	10	29	2.479
477	10	30	1.805	478	10	31	1.736	479	10	32	2.905	480	9	1	0.000
481	9	2	3.001	482	9	3	1.625	483	9	4	2.187	484	9	5	0.000
485	9	6	2.066	486	9	7	0.969	487	9	8	0.971	488	9	9	0.939
489	9	10	1.035	490	9	11	2.276	491	9	12	1.783	492	9	13	1.440
493	9	14	2.297	494	9	15	1.219	495	9	16	2.240	496	9	17	1.832
497	9	18	1.738	498	9	19	1.082	499	9	20	1.088	500	9	21	1.034
501	9	22	1.502	502	9	23	1.551	503	9	24	1.120	504	9	25	1.220
505	9	26	1.260	506	9	27	1.059	507	9	28	1.023	508	9	29	1.228
509	9	30	3.000	510	8	1	2.992	511	8	2	1.602	512	8	3	1.219
513	8	4	1.906	514	8	5	1.042	515	8	6	1.041	516	8	7	1.570
517	8	8	1.019	518	8	9	1.404	519	8	10	2.115	520	8	11	2.560
521	8	12	1.663	522	8	13	1.875	523	8	14	1.142	524	8	15	1.068
525	8	16	0.996	526	8	17	0.966	527	8	18	1.038	528	8	19	0.996
529	8	20	1.037	530	8	21	1.173	531	8	22	1.109	532	8	23	1.457
533	8	24	1.334	534	8	25	1.592	535	8	26	1.924	536	8	27	3.492
537	7	1	3.284	538	7	2	1.243	539	7	3	2.411	540	7	4	1.478
541	7	5	1.461	542	7	6	1.138	543	7	7	1.239	544	7	8	1.128
545	7	9	2.770	546	7	10	2.433	547	7	11	1.493	548	7	12	1.219
549	7	13	0.000	550	7	14	0.930	551	7	15	0.975	552	7	16	0.965
553	7	17	0.934	554	7	18	1.012	555	7	19	1.036	556	7	20	1.035
557	7	21	1.332	558	7	22	1.264	559	7	23	1.438	560	7	24	1.342
561	7	25	3.043	562	6	1	8.576	563	6	2	1.609	564	6	3	1.654
565	6	4	2.865	566	6	5	2.068	567	6	6	1.827	568	6	7	2.198
569	6	8	1.026	570	6	9	0.978	571	6	10	1.023	572	6	11	0.926
573	6	12	1.415	574	6	13	0.967	575	6	14	0.959	576	6	15	1.002
577	6	16	0.972	578	6	17	1.288	579	6	18	1.086	580	6	19	1.073
581	6	20	1.310	582	6	21	1.411	583	6	22	2.087	584	6	23	3.462
585	5	1	5.446	586	5	2	1.517	587	5	3	1.152	588	5	4	1.064
589	5	5	0.951	590	5	6	1.609	591	5	7	1.045	592	5	8	0.970
593	5	9	0.944	594	5	10	1.012	595	5	11	1.063	596	5	12	1.026
597	5	13	0.898	598	5	14	0.914	599	5	15	0.954	600	5	16	1.422
601	5	17	1.783	602	5	18	1.485	603	5	19	1.576	604	5	20	2.543
605	4	1	3.047	606	4	2	1.455	607	4	3	1.111	608	4	4	0.954
609	4	5	0.000	610	4	6	1.576	611	4	7	0.884	612	4	8	0.948
613	4	9	0.880	614	4	10	1.012	615	4	11	0.953	616	4	12	1.035
617	4	13	0.984	618	4	14	0.937	619	4	15	1.157	620	4	16	1.135
621	4	17	1.108	622	4	18	3.264	623	3	1	0.000	624	3	2	1.284
625	3	3	1.008	626	3	4	0.000	627	3	5	1.316	628	3	6	1.037
629	3	7	1.063	630	3	8	0.972	631	3	9	1.031	632	3	10	0.967

633	3	11	0.911	634	3	12	1.007	635	3	13	1.110	636	3	14	0.980
637	3	15	1.079	638	3	16	2.581	639	2	1	3.706	640	2	2	1.262
641	2	3	0.982	642	2	4	1.013	643	2	5	1.087	644	2	6	0.972
645	2	7	1.028	646	2	8	1.037	647	2	9	0.923	648	2	10	0.994
649	2	11	0.999	650	2	12	1.264	651	2	13	2.321	652	1	1	4.208
653	1	2	1.300	654	1	3	1.202	655	1	4	1.165	656	1	5	1.060
657	1	6	0.975	658	1	7	1.038	659	1	8	1.100	660	1	9	0.996
661	1	10	1.196	662	1	11	2.375								

SECTOR 4 Absolute pad number - Row - Relative pad number - Constant

1	20	1	2.430	2	20	2	1.100	3	20	3	1.317	4	20	4	1.186
5	20	5	1.703	6	20	6	1.262	7	20	7	1.257	8	20	8	1.130
9	20	9	1.218	10	20	10	1.348	11	20	11	1.049	12	20	12	1.057
13	20	13	1.181	14	20	14	1.073	15	20	15	1.158	16	20	16	0.956
17	20	17	0.966	18	20	18	1.151	19	20	19	0.950	20	20	20	1.485
21	20	21	1.037	22	20	22	0.988	23	20	23	1.136	24	20	24	0.970
25	20	25	1.028	26	20	26	1.074	27	20	27	0.939	28	20	28	0.976
29	20	29	0.994	30	20	30	0.974	31	20	31	1.159	32	20	32	0.964
33	20	33	0.910	34	20	34	0.865	35	20	35	1.084	36	20	36	0.851
37	20	37	1.241	38	20	38	1.067	39	20	39	1.258	40	20	40	1.262
41	20	41	0.996	42	20	42	0.990	43	20	43	1.199	44	20	44	1.253
45	20	45	1.158	46	20	46	1.492	47	20	47	1.110	48	20	48	1.230
49	20	49	1.154	50	20	50	1.252	51	20	51	1.370	52	20	52	1.801
53	20	53	1.432	54	20	54	1.808	55	20	55	2.573	56	19	1	2.231
57	19	2	0.911	58	19	3	0.875	59	19	4	0.931	60	19	5	1.477
61	19	6	0.938	62	19	7	0.805	63	19	8	0.758	64	19	9	0.777
65	19	10	0.951	66	19	11	0.802	67	19	12	1.079	68	19	13	0.976
69	19	14	0.808	70	19	15	0.928	71	19	16	0.827	72	19	17	0.839
73	19	18	1.200	74	19	19	0.883	75	19	20	0.797	76	19	21	0.774
77	19	22	0.876	78	19	23	1.006	79	19	24	0.905	80	19	25	0.778
81	19	26	0.812	82	19	27	0.787	83	19	28	0.805	84	19	29	0.828
85	19	30	0.851	86	19	31	0.777	87	19	32	1.175	88	19	33	5.493
89	19	34	1.031	90	19	35	0.923	91	19	36	1.053	92	19	37	0.855
93	19	38	0.882	94	19	39	0.959	95	19	40	0.872	96	19	41	0.946
97	19	42	1.341	98	19	43	1.312	99	19	44	0.924	100	19	45	0.902
101	19	46	0.865	102	19	47	0.845	103	19	48	0.835	104	19	49	0.893
105	19	50	0.848	106	19	51	0.950	107	19	52	1.001	108	19	53	2.348
109	18	1	4.035	110	18	2	1.304	111	18	3	1.356	112	18	4	0.972
113	18	5	1.259	114	18	6	1.363	115	18	7	0.959	116	18	8	1.151
117	18	9	1.008	118	18	10	0.000	119	18	11	0.000	120	18	12	0.000
121	18	13	0.855	122	18	14	1.185	123	18	15	1.031	124	18	16	1.188
125	18	17	0.920	126	18	18	0.979	127	18	19	0.835	128	18	20	1.021
129	18	21	0.835	130	18	22	0.898	131	18	23	0.800	132	18	24	0.892
133	18	25	0.829	134	18	26	0.840	135	18	27	0.861	136	18	28	0.835
137	18	29	0.916	138	18	30	0.847	139	18	31	0.836	140	18	32	0.782
141	18	33	0.838	142	18	34	0.992	143	18	35	0.886	144	18	36	1.142
145	18	37	0.950	146	18	38	0.892	147	18	39	0.865	148	18	40	0.860
149	18	41	1.182	150	18	42	0.931	151	18	43	0.000	152	18	44	0.000
153	18	45	0.000	154	18	46	0.000	155	18	47	0.000	156	18	48	0.000
157	18	49	1.274	158	18	50	2.343	159	17	1	3.964	160	17	2	0.993
161	17	3	1.057	162	17	4	0.969	163	17	5	0.988	164	17	6	1.300
165	17	7	0.858	166	17	8	0.911	167	17	9	0.910	168	17	10	0.798
169	17	11	0.830	170	17	12	0.835	171	17	13	0.815	172	17	14	0.919
173	17	15	0.897	174	17	16	0.958	175	17	17	0.872	176	17	18	0.900

177 17 19 2.529	178 17 20 1.010	179 17 21 1.000	180 17 22 0.879
181 17 23 0.881	182 17 24 0.817	183 17 25 0.879	184 17 26 0.857
185 17 27 0.857	186 17 28 0.858	187 17 29 0.826	188 17 30 0.878
189 17 31 0.887	190 17 32 0.832	191 17 33 1.037	192 17 34 1.599
193 17 35 1.102	194 17 36 0.843	195 17 37 0.932	196 17 38 1.026
197 17 39 0.871	198 17 40 0.882	199 17 41 0.827	200 17 42 0.795
201 17 43 0.826	202 17 44 0.809	203 17 45 0.843	204 17 46 0.869
205 17 47 0.899	206 17 48 2.188	207 16 1 3.643	208 16 2 1.518
209 16 3 1.149	210 16 4 1.203	211 16 5 1.146	212 16 6 1.234
213 16 7 1.933	214 16 8 1.149	215 16 9 1.704	216 16 10 1.682
217 16 11 2.081	218 16 12 1.091	219 16 13 1.171	220 16 14 2.644
221 16 15 5.859	222 16 16 3.697	223 16 17 1.342	224 16 18 5.716
225 16 19 7.197	226 16 20 5.009	227 16 21 0.908	228 16 22 0.860
229 16 23 0.848	230 16 24 0.865	231 16 25 0.834	232 16 26 0.860
233 16 27 0.815	234 16 28 0.889	235 16 29 0.763	236 16 30 0.902
237 16 31 0.984	238 16 32 1.051	239 16 33 0.954	240 16 34 1.110
241 16 35 0.882	242 16 36 0.936	243 16 37 0.956	244 16 38 0.937
245 16 39 0.919	246 16 40 0.963	247 16 41 1.073	248 16 42 1.218
249 16 43 1.810	250 16 44 1.643	251 16 45 1.008	252 16 46 2.790
253 15 1 2.590	254 15 2 1.457	255 15 3 1.190	256 15 4 1.288
257 15 5 0.973	258 15 6 0.918	259 15 7 1.627	260 15 8 1.418
261 15 9 1.779	262 15 10 1.633	263 15 11 1.609	264 15 12 0.989
265 15 13 2.711	266 15 14 2.537	267 15 15 4.287	268 15 16 5.224
269 15 17 3.904	270 15 18 7.636	271 15 19 5.032	272 15 20 0.882
273 15 21 0.885	274 15 22 0.928	275 15 23 0.900	276 15 24 0.894
277 15 25 0.846	278 15 26 0.803	279 15 27 0.860	280 15 28 0.913
281 15 29 1.109	282 15 30 0.827	283 15 31 0.896	284 15 32 0.966
285 15 33 1.214	286 15 34 0.898	287 15 35 0.983	288 15 36 0.930
289 15 37 0.891	290 15 38 0.916	291 15 39 0.883	292 15 40 0.953
293 15 41 0.925	294 15 42 0.865	295 15 43 1.341	296 15 44 2.419
297 14 1 2.286	298 14 2 1.433	299 14 3 1.971	300 14 4 1.472
301 14 5 1.443	302 14 6 1.062	303 14 7 1.955	304 14 8 1.850
305 14 9 1.222	306 14 10 1.282	307 14 11 1.072	308 14 12 2.233
309 14 13 2.751	310 14 14 5.295	311 14 15 5.321	312 14 16 6.864
313 14 17 0.997	314 14 18 0.000	315 14 19 1.012	316 14 20 1.850
317 14 21 0.969	318 14 22 0.886	319 14 23 0.881	320 14 24 0.893
321 14 25 0.846	322 14 26 1.130	323 14 27 1.043	324 14 28 0.862
325 14 29 0.950	326 14 30 0.815	327 14 31 0.976	328 14 32 0.973
329 14 33 0.926	330 14 34 1.032	331 14 35 0.878	332 14 36 1.097
333 14 37 1.137	334 14 38 1.240	335 14 39 1.496	336 14 40 1.028
337 14 41 4.538	338 13 1 2.343	339 13 2 1.286	340 13 3 1.074
341 13 4 1.033	342 13 5 0.998	343 13 6 0.964	344 13 7 1.480
345 13 8 1.200	346 13 9 1.014	347 13 10 1.000	348 13 11 1.090
349 13 12 2.597	350 13 13 2.428	351 13 14 2.648	352 13 15 5.011
353 13 16 1.060	354 13 17 0.000	355 13 18 1.019	356 13 19 0.995
357 13 20 0.968	358 13 21 0.929	359 13 22 0.946	360 13 23 0.996
361 13 24 0.981	362 13 25 0.958	363 13 26 0.876	364 13 27 0.816
365 13 28 2.560	366 13 29 1.148	367 13 30 0.956	368 13 31 0.959
369 13 32 0.936	370 13 33 0.918	371 13 34 0.856	372 13 35 0.917
373 13 36 0.929	374 13 37 0.990	375 13 38 1.014	376 13 39 4.776
377 12 1 2.593	378 12 2 1.553	379 12 3 1.389	380 12 4 1.203
381 12 5 1.627	382 12 6 1.708	383 12 7 1.055	384 12 8 1.057
385 12 9 1.029	386 12 10 1.073	387 12 11 1.134	388 12 12 1.373
389 12 13 1.069	390 12 14 1.151	391 12 15 1.045	392 12 16 1.022
393 12 17 0.000	394 12 18 1.502	395 12 19 0.947	396 12 20 1.037
397 12 21 0.981	398 12 22 1.142	399 12 23 0.975	400 12 24 0.894

401	12	25	0.911	402	12	26	1.230	403	12	27	1.076	404	12	28	1.047
405	12	29	1.049	406	12	30	1.002	407	12	31	1.032	408	12	32	1.307
409	12	33	1.153	410	12	34	0.000	411	12	35	1.257	412	12	36	1.304
413	12	37	2.576	414	11	1	2.649	415	11	2	1.505	416	11	3	1.013
417	11	4	1.036	418	11	5	1.630	419	11	6	1.254	420	11	7	0.973
421	11	8	0.899	422	11	9	0.940	423	11	10	0.977	424	11	11	1.091
425	11	12	0.912	426	11	13	1.784	427	11	14	1.206	428	11	15	0.960
429	11	16	0.000	430	11	17	0.000	431	11	18	0.000	432	11	19	1.004
433	11	20	1.454	434	11	21	1.071	435	11	22	0.946	436	11	23	1.007
437	11	24	1.082	438	11	25	1.051	439	11	26	0.989	440	11	27	0.966
441	11	28	0.884	442	11	29	0.954	443	11	30	1.057	444	11	31	0.000
445	11	32	0.000	446	11	33	1.269	447	11	34	2.572	448	10	1	2.484
449	10	2	2.120	450	10	3	2.067	451	10	4	1.350	452	10	5	1.055
453	10	6	1.015	454	10	7	1.053	455	10	8	1.085	456	10	9	1.021
457	10	10	1.071	458	10	11	1.013	459	10	12	0.934	460	10	13	1.583
461	10	14	1.134	462	10	15	1.822	463	10	16	0.967	464	10	17	1.698
465	10	18	1.603	466	10	19	1.348	467	10	20	1.069	468	10	21	0.928
469	10	22	0.929	470	10	23	0.972	471	10	24	0.907	472	10	25	0.828
473	10	26	1.011	474	10	27	1.419	475	10	28	1.295	476	10	29	0.000
477	10	30	0.000	478	10	31	1.266	479	10	32	4.115	480	9	1	0.000
481	9	2	0.980	482	9	3	1.312	483	9	4	0.951	484	9	5	1.431
485	9	6	0.939	486	9	7	1.032	487	9	8	0.982	488	9	9	0.900
489	9	10	1.261	490	9	11	1.090	491	9	12	1.341	492	9	13	1.240
493	9	14	1.645	494	9	15	1.035	495	9	16	1.997	496	9	17	1.861
497	9	18	1.687	498	9	19	1.047	499	9	20	1.055	500	9	21	1.033
501	9	22	1.246	502	9	23	1.052	503	9	24	1.072	504	9	25	1.495
505	9	26	1.037	506	9	27	1.008	507	9	28	0.000	508	9	29	1.193
509	9	30	3.039	510	8	1	2.864	511	8	2	1.492	512	8	3	1.277
513	8	4	1.205	514	8	5	1.061	515	8	6	1.058	516	8	7	0.946
517	8	8	1.070	518	8	9	1.370	519	8	10	1.373	520	8	11	2.531
521	8	12	2.669	522	8	13	3.089	523	8	14	1.560	524	8	15	2.593
525	8	16	1.077	526	8	17	0.970	527	8	18	1.066	528	8	19	0.000
529	8	20	0.000	530	8	21	1.072	531	8	22	1.096	532	8	23	0.982
533	8	24	1.074	534	8	25	1.268	535	8	26	1.408	536	8	27	2.397
537	7	1	5.892	538	7	2	1.191	539	7	3	1.110	540	7	4	1.016
541	7	5	1.122	542	7	6	1.016	543	7	7	0.947	544	7	8	1.214
545	7	9	1.389	546	7	10	2.450	547	7	11	2.391	548	7	12	1.528
549	7	13	1.319	550	7	14	1.684	551	7	15	1.121	552	7	16	0.968
553	7	17	0.943	554	7	18	1.016	555	7	19	0.000	556	7	20	0.000
557	7	21	0.991	558	7	22	0.980	559	7	23	1.051	560	7	24	1.213
561	7	25	2.158	562	6	1	2.453	563	6	2	1.603	564	6	3	2.026
565	6	4	1.078	566	6	5	1.157	567	6	6	1.204	568	6	7	0.000
569	6	8	1.035	570	6	9	1.201	571	6	10	1.118	572	6	11	1.025
573	6	12	1.026	574	6	13	0.976	575	6	14	0.970	576	6	15	0.990
577	6	16	0.930	578	6	17	1.330	579	6	18	1.189	580	6	19	1.029
581	6	20	0.000	582	6	21	0.000	583	6	22	0.000	584	6	23	2.423
585	5	1	2.524	586	5	2	1.012	587	5	3	1.104	588	5	4	1.037
589	5	5	1.042	590	5	6	1.020	591	5	7	0.924	592	5	8	0.979
593	5	9	0.923	594	5	10	1.108	595	5	11	0.960	596	5	12	1.004
597	5	13	0.930	598	5	14	0.941	599	5	15	0.842	600	5	16	0.956
601	5	17	1.018	602	5	18	0.735	603	5	19	0.946	604	5	20	2.417
605	4	1	4.145	606	4	2	1.512	607	4	3	1.273	608	4	4	1.583
609	4	5	0.949	610	4	6	0.953	611	4	7	1.000	612	4	8	0.964
613	4	9	0.000	614	4	10	2.502	615	4	11	3.481	616	4	12	0.000
617	4	13	0.954	618	4	14	0.913	619	4	15	0.997	620	4	16	1.104
621	4	17	1.079	622	4	18	3.447	623	3	1	2.797	624	3	2	1.194

625	3	3	1.067	626	3	4	0.869	627	3	5	0.899	628	3	6	0.923
629	3	7	1.269	630	3	8	6.856	631	3	9	2.065	632	3	10	3.567
633	3	11	3.913	634	3	12	1.141	635	3	13	0.985	636	3	14	0.895
637	3	15	0.916	638	3	16	2.445	639	2	1	2.108	640	2	2	1.388
641	2	3	1.078	642	2	4	1.122	643	2	5	1.027	644	2	6	1.012
645	2	7	1.065	646	2	8	0.910	647	2	9	0.930	648	2	10	0.990
649	2	11	1.076	650	2	12	1.179	651	2	13	2.359	652	1	1	2.922
653	1	2	1.137	654	1	3	1.175	655	1	4	1.379	656	1	5	1.424
657	1	6	1.189	658	1	7	0.959	659	1	8	1.130	660	1	9	0.966
661	1	10	1.233	662	1	11	2.623								

SECTOR 5 Absolute pad number - Row - Relative pad number - Constant

1	20	1	1.474	2	20	2	1.474	3	20	3	0.983	4	20	4	1.141
5	20	5	1.409	6	20	6	1.783	7	20	7	1.840	8	20	8	1.342
9	20	9	1.345	10	20	10	0.883	11	20	11	1.185	12	20	12	1.171
13	20	13	1.252	14	20	14	1.179	15	20	15	1.197	16	20	16	1.220
17	20	17	1.746	18	20	18	1.028	19	20	19	1.260	20	20	20	1.492
21	20	21	1.233	22	20	22	1.246	23	20	23	1.208	24	20	24	1.178
25	20	25	1.055	26	20	26	1.187	27	20	27	1.064	28	20	28	1.100
29	20	29	1.147	30	20	30	1.127	31	20	31	1.121	32	20	32	1.141
33	20	33	1.062	34	20	34	1.099	35	20	35	0.973	36	20	36	0.940
37	20	37	1.189	38	20	38	1.101	39	20	39	1.009	40	20	40	1.209
41	20	41	1.227	42	20	42	1.109	43	20	43	1.257	44	20	44	1.106
45	20	45	0.965	46	20	46	1.156	47	20	47	1.034	48	20	48	1.280
49	20	49	1.639	50	20	50	1.221	51	20	51	1.272	52	20	52	1.586
53	20	53	1.443	54	20	54	1.381	55	20	55	2.294	56	19	1	0.000
57	19	2	1.579	58	19	3	1.000	59	19	4	1.201	60	19	5	1.351
61	19	6	2.398	62	19	7	1.006	63	19	8	1.005	64	19	9	0.870
65	19	10	1.025	66	19	11	0.000	67	19	12	1.033	68	19	13	0.941
69	19	14	0.817	70	19	15	0.999	71	19	16	0.937	72	19	17	0.835
73	19	18	0.994	74	19	19	0.919	75	19	20	0.931	76	19	21	0.841
77	19	22	0.886	78	19	23	0.814	79	19	24	0.822	80	19	25	0.796
81	19	26	0.866	82	19	27	0.790	83	19	28	0.843	84	19	29	0.851
85	19	30	0.901	86	19	31	0.825	87	19	32	0.866	88	19	33	0.875
89	19	34	0.833	90	19	35	0.846	91	19	36	0.835	92	19	37	0.961
93	19	38	0.873	94	19	39	0.965	95	19	40	0.799	96	19	41	1.034
97	19	42	1.027	98	19	43	0.723	99	19	44	0.785	100	19	45	0.844
101	19	46	0.847	102	19	47	1.563	103	19	48	0.800	104	19	49	0.862
105	19	50	0.836	106	19	51	0.844	107	19	52	0.918	108	19	53	2.000
109	18	1	1.395	110	18	2	1.205	111	18	3	0.948	112	18	4	0.962
113	18	5	1.005	114	18	6	1.330	115	18	7	1.200	116	18	8	0.000
117	18	9	0.954	118	18	10	1.052	119	18	11	0.772	120	18	12	1.378
121	18	13	1.294	122	18	14	1.062	123	18	15	1.034	124	18	16	0.946
125	18	17	0.823	126	18	18	1.025	127	18	19	0.929	128	18	20	1.007
129	18	21	0.794	130	18	22	0.867	131	18	23	0.806	132	18	24	0.935
133	18	25	1.028	134	18	26	0.827	135	18	27	0.774	136	18	28	0.820
137	18	29	0.941	138	18	30	0.817	139	18	31	1.063	140	18	32	0.808
141	18	33	0.971	142	18	34	0.999	143	18	35	0.948	144	18	36	0.995
145	18	37	1.035	146	18	38	0.806	147	18	39	0.992	148	18	40	0.884
149	18	41	1.058	150	18	42	0.910	151	18	43	0.974	152	18	44	0.914
153	18	45	0.000	154	18	46	0.000	155	18	47	0.000	156	18	48	0.916
157	18	49	0.941	158	18	50	2.387	159	17	1	2.084	160	17	2	1.169
161	17	3	3.806	162	17	4	1.560	163	17	5	1.100	164	17	6	1.269
165	17	7	0.000	166	17	8	0.946	167	17	9	1.046	168	17	10	0.000

169	17	11	0.969	170	17	12	0.852	171	17	13	0.979	172	17	14	0.771
173	17	15	0.928	174	17	16	0.894	175	17	17	0.793	176	17	18	0.962
177	17	19	1.586	178	17	20	0.986	179	17	21	0.868	180	17	22	0.918
181	17	23	0.790	182	17	24	0.659	183	17	25	0.831	184	17	26	0.790
185	17	27	0.965	186	17	28	0.866	187	17	29	0.872	188	17	30	0.939
189	17	31	0.922	190	17	32	0.946	191	17	33	0.863	192	17	34	0.839
193	17	35	1.195	194	17	36	1.069	195	17	37	0.789	196	17	38	0.913
197	17	39	0.828	198	17	40	0.916	199	17	41	0.963	200	17	42	1.089
201	17	43	0.000	202	17	44	0.947	203	17	45	0.905	204	17	46	1.059
205	17	47	1.080	206	17	48	2.489	207	16	1	2.784	208	16	2	1.260
209	16	3	1.828	210	16	4	1.184	211	16	5	1.282	212	16	6	1.102
213	16	7	1.352	214	16	8	1.065	215	16	9	0.931	216	16	10	1.079
217	16	11	1.059	218	16	12	1.023	219	16	13	0.894	220	16	14	1.168
221	16	15	0.935	222	16	16	1.069	223	16	17	0.920	224	16	18	0.942
225	16	19	0.768	226	16	20	0.979	227	16	21	0.892	228	16	22	0.815
229	16	23	0.831	230	16	24	0.816	231	16	25	0.841	232	16	26	0.871
233	16	27	2.773	234	16	28	2.431	235	16	29	0.848	236	16	30	0.836
237	16	31	0.980	238	16	32	1.138	239	16	33	0.899	240	16	34	1.101
241	16	35	0.928	242	16	36	0.000	243	16	37	0.000	244	16	38	0.914
245	16	39	0.950	246	16	40	1.145	247	16	41	1.187	248	16	42	1.359
249	16	43	1.820	250	16	44	1.239	251	16	45	1.244	252	16	46	3.173
253	15	1	2.815	254	15	2	1.666	255	15	3	1.375	256	15	4	1.674
257	15	5	0.950	258	15	6	0.848	259	15	7	0.972	260	15	8	0.934
261	15	9	1.006	262	15	10	0.873	263	15	11	1.388	264	15	12	0.902
265	15	13	0.866	266	15	14	0.956	267	15	15	0.889	268	15	16	1.256
269	15	17	1.353	270	15	18	1.077	271	15	19	1.499	272	15	20	0.816
273	15	21	0.931	274	15	22	0.859	275	15	23	0.807	276	15	24	0.848
277	15	25	0.863	278	15	26	4.729	279	15	27	5.654	280	15	28	0.917
281	15	29	0.873	282	15	30	0.973	283	15	31	0.926	284	15	32	1.133
285	15	33	0.950	286	15	34	0.981	287	15	35	1.311	288	15	36	1.039
289	15	37	0.975	290	15	38	1.494	291	15	39	0.909	292	15	40	1.108
293	15	41	1.119	294	15	42	1.078	295	15	43	1.412	296	15	44	3.134
297	14	1	2.912	298	14	2	1.844	299	14	3	1.990	300	14	4	1.575
301	14	5	1.070	302	14	6	1.016	303	14	7	1.604	304	14	8	1.083
305	14	9	1.064	306	14	10	0.938	307	14	11	0.894	308	14	12	1.071
309	14	13	0.981	310	14	14	0.907	311	14	15	2.494	312	14	16	1.028
313	14	17	0.962	314	14	18	0.941	315	14	19	0.845	316	14	20	0.879
317	14	21	1.019	318	14	22	0.905	319	14	23	1.207	320	14	24	0.963
321	14	25	0.953	322	14	26	1.228	323	14	27	1.059	324	14	28	0.868
325	14	29	1.191	326	14	30	0.952	327	14	31	1.174	328	14	32	1.090
329	14	33	0.000	330	14	34	1.019	331	14	35	0.990	332	14	36	0.000
333	14	37	0.000	334	14	38	0.000	335	14	39	0.000	336	14	40	0.000
337	14	41	2.783	338	13	1	3.102	339	13	2	1.105	340	13	3	1.072
341	13	4	1.118	342	13	5	1.068	343	13	6	1.054	344	13	7	1.010
345	13	8	0.979	346	13	9	0.902	347	13	10	0.865	348	13	11	0.841
349	13	12	0.817	350	13	13	1.069	351	13	14	1.181	352	13	15	1.077
353	13	16	0.788	354	13	17	1.000	355	13	18	0.868	356	13	19	0.876
357	13	20	0.858	358	13	21	0.873	359	13	22	1.008	360	13	23	1.106
361	13	24	1.077	362	13	25	0.856	363	13	26	0.984	364	13	27	0.877
365	13	28	0.951	366	13	29	0.978	367	13	30	0.982	368	13	31	0.000
369	13	32	0.955	370	13	33	0.979	371	13	34	1.007	372	13	35	0.937
373	13	36	1.220	374	13	37	0.000	375	13	38	1.593	376	13	39	0.000
377	12	1	0.000	378	12	2	1.114	379	12	3	1.402	380	12	4	1.151
381	12	5	0.000	382	12	6	0.000	383	12	7	1.040	384	12	8	1.365
385	12	9	1.029	386	12	10	1.221	387	12	11	1.023	388	12	12	1.358
389	12	13	0.936	390	12	14	1.033	391	12	15	1.087	392	12	16	1.161

393	12	17	1.071	394	12	18	1.022	395	12	19	1.044	396	12	20	1.029
397	12	21	0.979	398	12	22	1.081	399	12	23	1.037	400	12	24	1.064
401	12	25	2.077	402	12	26	2.567	403	12	27	1.809	404	12	28	1.010
405	12	29	2.990	406	12	30	0.776	407	12	31	1.327	408	12	32	1.482
409	12	33	1.300	410	12	34	2.624	411	12	35	1.571	412	12	36	1.609
413	12	37	5.559	414	11	1	0.000	415	11	2	1.129	416	11	3	1.491
417	11	4	0.990	418	11	5	0.000	419	11	6	0.000	420	11	7	0.924
421	11	8	1.025	422	11	9	1.292	423	11	10	1.069	424	11	11	1.192
425	11	12	1.042	426	11	13	1.169	427	11	14	1.105	428	11	15	1.043
429	11	16	1.022	430	11	17	1.037	431	11	18	1.168	432	11	19	0.964
433	11	20	1.009	434	11	21	0.978	435	11	22	1.314	436	11	23	1.244
437	11	24	1.073	438	11	25	0.000	439	11	26	1.288	440	11	27	3.409
441	11	28	1.728	442	11	29	1.326	443	11	30	1.834	444	11	31	1.137
445	11	32	1.174	446	11	33	1.223	447	11	34	2.616	448	10	1	4.536
449	10	2	1.670	450	10	3	3.313	451	10	4	1.654	452	10	5	1.015
453	10	6	1.018	454	10	7	0.994	455	10	8	1.227	456	10	9	0.955
457	10	10	1.076	458	10	11	0.991	459	10	12	0.996	460	10	13	1.889
461	10	14	1.142	462	10	15	1.482	463	10	16	1.671	464	10	17	2.146
465	10	18	0.944	466	10	19	0.878	467	10	20	1.095	468	10	21	0.932
469	10	22	3.975	470	10	23	1.786	471	10	24	1.430	472	10	25	0.000
473	10	26	2.877	474	10	27	1.649	475	10	28	1.432	476	10	29	1.620
477	10	30	2.306	478	10	31	1.861	479	10	32	2.581	480	9	1	4.619
481	9	2	1.112	482	9	3	1.052	483	9	4	0.954	484	9	5	1.399
485	9	6	1.034	486	9	7	0.959	487	9	8	0.951	488	9	9	0.960
489	9	10	1.092	490	9	11	1.114	491	9	12	2.194	492	9	13	1.067
493	9	14	1.285	494	9	15	1.781	495	9	16	2.185	496	9	17	1.521
497	9	18	1.160	498	9	19	1.064	499	9	20	2.118	500	9	21	0.911
501	9	22	0.973	502	9	23	1.138	503	9	24	1.774	504	9	25	1.278
505	9	26	1.206	506	9	27	1.613	507	9	28	1.617	508	9	29	1.114
509	9	30	2.712	510	8	1	0.000	511	8	2	0.000	512	8	3	1.006
513	8	4	1.312	514	8	5	4.114	515	8	6	3.587	516	8	7	0.960
517	8	8	1.971	518	8	9	2.488	519	8	10	1.305	520	8	11	2.380
521	8	12	1.099	522	8	13	2.644	523	8	14	2.024	524	8	15	1.286
525	8	16	1.056	526	8	17	0.946	527	8	18	1.076	528	8	19	2.373
529	8	20	3.276	530	8	21	1.104	531	8	22	1.459	532	8	23	1.120
533	8	24	1.034	534	8	25	1.348	535	8	26	1.340	536	8	27	2.535
537	7	1	0.000	538	7	2	0.000	539	7	3	1.317	540	7	4	1.753
541	7	5	2.344	542	7	6	0.888	543	7	7	1.080	544	7	8	2.104
545	7	9	1.463	546	7	10	2.516	547	7	11	2.243	548	7	12	2.950
549	7	13	2.108	550	7	14	1.296	551	7	15	1.140	552	7	16	1.030
553	7	17	1.086	554	7	18	2.559	555	7	19	1.354	556	7	20	1.050
557	7	21	1.072	558	7	22	1.247	559	7	23	1.138	560	7	24	1.540
561	7	25	2.678	562	6	1	0.000	563	6	2	4.616	564	6	3	1.744
565	6	4	1.626	566	6	5	1.383	567	6	6	1.093	568	6	7	0.000
569	6	8	2.415	570	6	9	1.107	571	6	10	0.643	572	6	11	0.954
573	6	12	1.034	574	6	13	1.286	575	6	14	0.971	576	6	15	0.924
577	6	16	1.172	578	6	17	2.825	579	6	18	1.120	580	6	19	1.024
581	6	20	1.364	582	6	21	1.612	583	6	22	1.681	584	6	23	2.968
585	5	1	7.030	586	5	2	4.037	587	5	3	0.921	588	5	4	1.341
589	5	5	0.842	590	5	6	0.910	591	5	7	1.318	592	5	8	1.874
593	5	9	1.050	594	5	10	1.109	595	5	11	0.822	596	5	12	0.867
597	5	13	0.976	598	5	14	0.994	599	5	15	0.911	600	5	16	1.244
601	5	17	1.108	602	5	18	0.953	603	5	19	0.982	604	5	20	3.115
605	4	1	3.655	606	4	2	1.272	607	4	3	1.474	608	4	4	1.360
609	4	5	0.952	610	4	6	0.880	611	4	7	2.044	612	4	8	2.202
613	4	9	0.977	614	4	10	1.108	615	4	11	1.253	616	4	12	0.967

617	4	13	1.058	618	4	14	1.014	619	4	15	0.968	620	4	16	1.216
621	4	17	1.101	622	4	18	2.350	623	3	1	2.765	624	3	2	1.064
625	3	3	1.028	626	3	4	0.915	627	3	5	0.942	628	3	6	1.209
629	3	7	1.373	630	3	8	2.227	631	3	9	1.064	632	3	10	1.111
633	3	11	0.790	634	3	12	1.430	635	3	13	1.078	636	3	14	0.939
637	3	15	1.011	638	3	16	1.982	639	2	1	0.000	640	2	2	1.029
641	2	3	1.171	642	2	4	1.314	643	2	5	1.053	644	2	6	1.582
645	2	7	1.528	646	2	8	1.015	647	2	9	0.963	648	2	10	0.892
649	2	11	0.902	650	2	12	1.277	651	2	13	1.825	652	1	1	0.000
653	1	2	1.135	654	1	3	1.049	655	1	4	0.952	656	1	5	1.587
657	1	6	1.132	658	1	7	1.133	659	1	8	1.060	660	1	9	1.112
661	1	10	1.362	662	1	11	2.474								

SECTOR 6 Absolute pad number - Row - Relative pad number - Constant

1	20	1	2.006	2	20	2	1.358	3	20	3	1.376	4	20	4	2.557
5	20	5	1.080	6	20	6	1.271	7	20	7	1.518	8	20	8	1.226
9	20	9	0.967	10	20	10	1.299	11	20	11	1.047	12	20	12	0.966
13	20	13	1.301	14	20	14	0.936	15	20	15	1.138	16	20	16	1.020
17	20	17	1.017	18	20	18	1.057	19	20	19	0.954	20	20	20	1.212
21	20	21	1.146	22	20	22	1.007	23	20	23	1.011	24	20	24	1.043
25	20	25	0.989	26	20	26	1.123	27	20	27	1.059	28	20	28	0.979
29	20	29	1.023	30	20	30	1.005	31	20	31	1.194	32	20	32	1.084
33	20	33	1.052	34	20	34	0.940	35	20	35	0.881	36	20	36	0.881
37	20	37	1.823	38	20	38	1.223	39	20	39	1.451	40	20	40	0.905
41	20	41	1.075	42	20	42	1.266	43	20	43	1.045	44	20	44	1.734
45	20	45	1.285	46	20	46	1.180	47	20	47	1.101	48	20	48	1.208
49	20	49	1.451	50	20	50	1.145	51	20	51	1.462	52	20	52	1.168
53	20	53	1.444	54	20	54	1.296	55	20	55	2.611	56	19	1	1.976
57	19	2	1.153	58	19	3	1.526	59	19	4	2.406	60	19	5	0.896
61	19	6	0.830	62	19	7	0.826	63	19	8	0.819	64	19	9	0.811
65	19	10	0.802	66	19	11	0.820	67	19	12	0.841	68	19	13	0.976
69	19	14	0.968	70	19	15	0.996	71	19	16	0.829	72	19	17	0.827
73	19	18	1.050	74	19	19	0.910	75	19	20	0.784	76	19	21	0.762
77	19	22	0.804	78	19	23	0.733	79	19	24	0.806	80	19	25	0.774
81	19	26	0.843	82	19	27	0.718	83	19	28	0.759	84	19	29	0.763
85	19	30	0.774	86	19	31	0.851	87	19	32	0.796	88	19	33	0.868
89	19	34	0.909	90	19	35	1.090	91	19	36	1.092	92	19	37	1.136
93	19	38	1.724	94	19	39	1.361	95	19	40	0.956	96	19	41	0.974
97	19	42	1.293	98	19	43	1.528	99	19	44	1.038	100	19	45	0.856
101	19	46	1.154	102	19	47	0.986	103	19	48	0.810	104	19	49	0.816
105	19	50	0.864	106	19	51	0.959	107	19	52	1.017	108	19	53	2.720
109	18	1	3.599	110	18	2	2.168	111	18	3	1.840	112	18	4	1.232
113	18	5	0.864	114	18	6	1.941	115	18	7	1.046	116	18	8	1.096
117	18	9	0.944	118	18	10	0.000	119	18	11	0.000	120	18	12	0.000
121	18	13	0.909	122	18	14	1.248	123	18	15	0.857	124	18	16	0.963
125	18	17	0.807	126	18	18	0.907	127	18	19	0.757	128	18	20	0.865
129	18	21	0.802	130	18	22	0.927	131	18	23	0.917	132	18	24	0.892
133	18	25	0.887	134	18	26	0.855	135	18	27	0.898	136	18	28	0.886
137	18	29	0.832	138	18	30	0.866	139	18	31	0.885	140	18	32	0.878
141	18	33	0.786	142	18	34	1.093	143	18	35	0.873	144	18	36	1.911
145	18	37	1.881	146	18	38	0.846	147	18	39	1.191	148	18	40	0.884
149	18	41	1.713	150	18	42	0.909	151	18	43	0.931	152	18	44	0.910
153	18	45	1.598	154	18	46	1.376	155	18	47	1.256	156	18	48	1.658
157	18	49	1.423	158	18	50	2.594	159	17	1	3.472	160	17	2	1.873

161	17	3	1.006	162	17	4	1.173	163	17	5	0.994	164	17	6	0.923
165	17	7	0.861	166	17	8	0.888	167	17	9	0.894	168	17	10	0.893
169	17	11	0.856	170	17	12	0.903	171	17	13	0.889	172	17	14	0.887
173	17	15	0.885	174	17	16	1.650	175	17	17	0.790	176	17	18	0.945
177	17	19	0.918	178	17	20	1.038	179	17	21	1.070	180	17	22	0.816
181	17	23	0.840	182	17	24	0.815	183	17	25	0.857	184	17	26	0.853
185	17	27	0.883	186	17	28	0.823	187	17	29	0.924	188	17	30	0.931
189	17	31	1.081	190	17	32	0.746	191	17	33	0.948	192	17	34	1.389
193	17	35	1.457	194	17	36	1.018	195	17	37	1.081	196	17	38	0.976
197	17	39	0.895	198	17	40	1.008	199	17	41	0.991	200	17	42	0.927
201	17	43	0.900	202	17	44	1.004	203	17	45	0.995	204	17	46	0.867
205	17	47	0.979	206	17	48	2.339	207	16	1	2.793	208	16	2	1.228
209	16	3	1.320	210	16	4	1.202	211	16	5	1.280	212	16	6	1.138
213	16	7	1.027	214	16	8	2.328	215	16	9	1.502	216	16	10	1.401
217	16	11	0.882	218	16	12	1.623	219	16	13	1.728	220	16	14	0.986
221	16	15	0.927	222	16	16	1.027	223	16	17	0.824	224	16	18	0.828
225	16	19	2.470	226	16	20	3.146	227	16	21	0.832	228	16	22	0.833
229	16	23	0.819	230	16	24	0.882	231	16	25	0.888	232	16	26	0.866
233	16	27	0.927	234	16	28	1.627	235	16	29	0.850	236	16	30	0.896
237	16	31	1.021	238	16	32	1.125	239	16	33	0.886	240	16	34	1.208
241	16	35	0.815	242	16	36	0.945	243	16	37	0.853	244	16	38	0.862
245	16	39	1.566	246	16	40	1.846	247	16	41	0.934	248	16	42	1.128
249	16	43	1.079	250	16	44	1.245	251	16	45	1.154	252	16	46	3.081
253	15	1	2.561	254	15	2	1.518	255	15	3	1.246	256	15	4	1.218
257	15	5	1.065	258	15	6	0.970	259	15	7	1.257	260	15	8	1.633
261	15	9	2.027	262	15	10	1.401	263	15	11	1.363	264	15	12	1.378
265	15	13	1.020	266	15	14	1.047	267	15	15	0.954	268	15	16	1.007
269	15	17	1.283	270	15	18	2.557	271	15	19	2.727	272	15	20	0.867
273	15	21	0.917	274	15	22	0.844	275	15	23	0.876	276	15	24	0.916
277	15	25	0.906	278	15	26	1.358	279	15	27	1.219	280	15	28	0.000
281	15	29	0.990	282	15	30	0.905	283	15	31	0.875	284	15	32	1.014
285	15	33	1.265	286	15	34	0.887	287	15	35	1.176	288	15	36	0.910
289	15	37	1.580	290	15	38	3.189	291	15	39	1.008	292	15	40	0.980
293	15	41	0.926	294	15	42	0.903	295	15	43	1.359	296	15	44	2.201
297	14	1	3.091	298	14	2	1.548	299	14	3	2.036	300	14	4	2.191
301	14	5	0.000	302	14	6	1.093	303	14	7	0.982	304	14	8	1.939
305	14	9	1.282	306	14	10	1.344	307	14	11	1.913	308	14	12	0.914
309	14	13	1.133	310	14	14	1.367	311	14	15	1.147	312	14	16	1.015
313	14	17	1.023	314	14	18	0.904	315	14	19	0.784	316	14	20	0.908
317	14	21	0.827	318	14	22	0.816	319	14	23	0.818	320	14	24	0.956
321	14	25	0.982	322	14	26	1.285	323	14	27	0.989	324	14	28	0.861
325	14	29	1.131	326	14	30	0.982	327	14	31	0.906	328	14	32	0.973
329	14	33	0.904	330	14	34	1.015	331	14	35	0.986	332	14	36	1.074
333	14	37	1.182	334	14	38	1.238	335	14	39	1.568	336	14	40	1.299
337	14	41	3.082	338	13	1	2.946	339	13	2	1.411	340	13	3	1.038
341	13	4	1.008	342	13	5	1.049	343	13	6	1.020	344	13	7	1.460
345	13	8	1.373	346	13	9	1.146	347	13	10	1.044	348	13	11	1.270
349	13	12	0.963	350	13	13	1.023	351	13	14	1.254	352	13	15	1.024
353	13	16	0.855	354	13	17	0.951	355	13	18	0.866	356	13	19	0.971
357	13	20	0.889	358	13	21	0.902	359	13	22	0.959	360	13	23	1.143
361	13	24	0.958	362	13	25	0.907	363	13	26	0.913	364	13	27	0.832
365	13	28	2.174	366	13	29	1.100	367	13	30	0.954	368	13	31	0.934
369	13	32	1.014	370	13	33	0.998	371	13	34	1.059	372	13	35	0.981
373	13	36	1.039	374	13	37	1.146	375	13	38	1.121	376	13	39	2.838
377	12	1	2.391	378	12	2	1.329	379	12	3	1.159	380	12	4	1.424
381	12	5	2.244	382	12	6	2.721	383	12	7	1.085	384	12	8	1.193

385	12	9	1.064	386	12	10	1.021	387	12	11	0.929	388	12	12	1.038
389	12	13	1.064	390	12	14	1.414	391	12	15	1.060	392	12	16	1.118
393	12	17	1.119	394	12	18	1.443	395	12	19	1.042	396	12	20	0.907
397	12	21	0.970	398	12	22	0.933	399	12	23	3.301	400	12	24	1.290
401	12	25	1.095	402	12	26	1.325	403	12	27	1.984	404	12	28	1.317
405	12	29	1.153	406	12	30	1.713	407	12	31	1.505	408	12	32	1.991
409	12	33	1.537	410	12	34	1.062	411	12	35	1.200	412	12	36	1.191
413	12	37	2.642	414	11	1	2.690	415	11	2	1.451	416	11	3	1.157
417	11	4	1.058	418	11	5	3.614	419	11	6	3.030	420	11	7	1.057
421	11	8	1.013	422	11	9	1.077	423	11	10	0.946	424	11	11	1.101
425	11	12	1.006	426	11	13	1.263	427	11	14	0.960	428	11	15	1.008
429	11	16	1.206	430	11	17	1.104	431	11	18	1.011	432	11	19	0.963
433	11	20	1.062	434	11	21	4.438	435	11	22	1.080	436	11	23	1.537
437	11	24	1.255	438	11	25	2.031	439	11	26	1.147	440	11	27	1.205
441	11	28	1.235	442	11	29	1.166	443	11	30	2.885	444	11	31	1.145
445	11	32	1.135	446	11	33	1.278	447	11	34	4.012	448	10	1	2.658
449	10	2	1.616	450	10	3	1.844	451	10	4	1.927	452	10	5	1.165
453	10	6	1.276	454	10	7	1.183	455	10	8	1.336	456	10	9	1.127
457	10	10	1.154	458	10	11	1.122	459	10	12	2.042	460	10	13	2.557
461	10	14	1.123	462	10	15	1.386	463	10	16	1.113	464	10	17	1.068
465	10	18	1.066	466	10	19	1.311	467	10	20	1.225	468	10	21	0.997
469	10	22	1.920	470	10	23	1.192	471	10	24	1.750	472	10	25	2.992
473	10	26	0.000	474	10	27	2.688	475	10	28	1.350	476	10	29	1.326
477	10	30	1.323	478	10	31	1.858	479	10	32	2.527	480	9	1	2.659
481	9	2	1.235	482	9	3	0.996	483	9	4	0.969	484	9	5	1.103
485	9	6	1.042	486	9	7	1.054	487	9	8	1.067	488	9	9	0.999
489	9	10	1.002	490	9	11	2.067	491	9	12	1.662	492	9	13	1.088
493	9	14	1.302	494	9	15	2.340	495	9	16	2.658	496	9	17	3.268
497	9	18	2.208	498	9	19	1.049	499	9	20	0.991	500	9	21	1.032
501	9	22	1.244	502	9	23	1.252	503	9	24	0.959	504	9	25	1.329
505	9	26	1.036	506	9	27	1.004	507	9	28	0.981	508	9	29	1.212
509	9	30	2.472	510	8	1	5.125	511	8	2	3.030	512	8	3	1.263
513	8	4	1.249	514	8	5	1.937	515	8	6	2.214	516	8	7	0.963
517	8	8	1.002	518	8	9	1.264	519	8	10	0.000	520	8	11	4.133
521	8	12	2.901	522	8	13	2.312	523	8	14	2.075	524	8	15	1.404
525	8	16	1.422	526	8	17	1.058	527	8	18	1.087	528	8	19	0.000
529	8	20	0.000	530	8	21	0.922	531	8	22	10.897	532	8	23	0.000
533	8	24	1.110	534	8	25	1.248	535	8	26	1.288	536	8	27	2.751
537	7	1	3.672	538	7	2	4.097	539	7	3	1.320	540	7	4	1.197
541	7	5	1.832	542	7	6	1.003	543	7	7	1.080	544	7	8	1.255
545	7	9	3.471	546	7	10	2.923	547	7	11	3.572	548	7	12	1.942
549	7	13	2.415	550	7	14	1.102	551	7	15	1.495	552	7	16	1.023
553	7	17	1.118	554	7	18	0.000	555	7	19	0.000	556	7	20	0.000
557	7	21	1.162	558	7	22	1.128	559	7	23	1.144	560	7	24	1.182
561	7	25	2.489	562	6	1	7.374	563	6	2	2.940	564	6	3	1.881
565	6	4	2.683	566	6	5	2.467	567	6	6	1.113	568	6	7	1.264
569	6	8	1.301	570	6	9	1.263	571	6	10	1.247	572	6	11	1.298
573	6	12	1.292	574	6	13	1.269	575	6	14	1.237	576	6	15	1.021
577	6	16	1.020	578	6	17	1.141	579	6	18	1.138	580	6	19	1.206
581	6	20	1.219	582	6	21	2.397	583	6	22	1.515	584	6	23	2.735
585	5	1	4.945	586	5	2	1.445	587	5	3	1.632	588	5	4	1.491
589	5	5	1.528	590	5	6	1.224	591	5	7	1.174	592	5	8	1.145
593	5	9	1.264	594	5	10	1.153	595	5	11	1.184	596	5	12	1.333
597	5	13	0.974	598	5	14	1.033	599	5	15	0.920	600	5	16	1.048
601	5	17	1.029	602	5	18	1.316	603	5	19	1.395	604	5	20	2.810
605	4	1	2.148	606	4	2	1.731	607	4	3	1.539	608	4	4	1.083

609	4	5	1.187	610	4	6	1.162	611	4	7	1.110	612	4	8	1.108
613	4	9	1.218	614	4	10	1.230	615	4	11	1.129	616	4	12	1.081
617	4	13	1.050	618	4	14	0.909	619	4	15	1.132	620	4	16	1.170
621	4	17	1.241	622	4	18	3.031	623	3	1	2.466	624	3	2	1.085
625	3	3	0.993	626	3	4	0.996	627	3	5	0.938	628	3	6	1.087
629	3	7	1.278	630	3	8	1.191	631	3	9	1.249	632	3	10	1.112
633	3	11	1.033	634	3	12	1.382	635	3	13	1.141	636	3	14	0.889
637	3	15	1.102	638	3	16	2.472	639	2	1	1.923	640	2	2	1.328
641	2	3	1.015	642	2	4	1.243	643	2	5	1.081	644	2	6	0.905
645	2	7	1.315	646	2	8	1.567	647	2	9	0.910	648	2	10	1.120
649	2	11	1.071	650	2	12	1.191	651	2	13	2.157	652	1	1	2.473
653	1	2	1.271	654	1	3	1.102	655	1	4	1.122	656	1	5	1.317
657	1	6	1.252	658	1	7	1.757	659	1	8	1.036	660	1	9	1.465
661	1	10	1.179	662	1	11	2.555								