ERRATA for Ramsey Theory on the Integers

Date: February 9, 2006

FRONT MATTER

p. xi, Table 4.1: change "w" to "w'"

CHAPTER 1

p. 12, line -11: change "We" to "The"

p. 12, line -4: insert "monochromatic" before "integers"

p. 15, line -5: change "F" to "$\mathcal{F}$"

p. 16, line 2: change "exists" to "exist"

p. 17, line 17: change "$M(k;1)$" to "$M(k+1;1)$"

p. 20, line -3: change "contain" to "contains"

CHAPTER 2

p. 24, line -2: change "exist" to "exists"

p. 29, line -15: change "$w(3,4)$" to "$w(3;4)$"

p. 34, Table 2.1: change "$w(4,4,3;3) = 84$" to "$w(4,4,3;3) = 89$"

p. 34, Table 2.1: change "$w(5,3,3;3) = 77$" to "$w(5,3,3;3) = 80$"

p. 37, line 3: change "$k \geq 1$" to "$k \geq 2$"

p. 38, Table 2.2.: change "$w(4;3) \geq 292$" to "$w(4;3) \geq 293$"; change "$w(5;3) \geq 1210$" to "$w(5;3) \geq 966$"

p. 42, line 2: change "$\nu_n(k)$" to "$\nu_k(n)$"

p. 42, line -2: change "$\frac{m}{r}$" to "$\frac{m-1}{r}$"

p. 47, line -14: change "χ_m" to "χ"

p. 48, lines 5–8: replace the definitions of the x_i''s by: $x_0' = d; x_i' = x_{i-1}$ for $1 \leq i \leq t+1$.

p. 49, exercise 1: Should read: "Show that within $[1,n]$ there are $\frac{n^2}{2(k-1)}(1+o(1))$ k-term arithmetic progressions."

p. 50, exercise 6: change "$w(k,2;r)$" to "$w(k,2;2)$"

p. 50, exercise 8: in (b) change "$\sum_{i=1}^{\frac{n^2}{4}+O(n)} 2^{1-k} = \frac{n^2+O(n)}{2^{k+1}}$," to "$\sum_{i=1}^{\frac{n^2}{2(k-1)}(1+o(1))} 2^{1-k} = \frac{n^2}{(k-1)2^k}(1+o(1))$."

p. 50, exercise 8: in (c) change "$\frac{n^2+O(n)}{2^{k+1}} < 1$" to "$\frac{n^2}{(k-1)2^k}(1+o(1)) < 1$"

p. 50, exercise 8: in (d) change "$n = 2^{k/2}$" to "$n = \sqrt{k-1} \cdot 2^{\frac{k-1}{2}}$"

p. 52, line -3: change "$w(5;2)$" to "$w(5,5;2)$"

CHAPTER 3

p. 61, line -8: change the first occurrence of "t" to "i"

p. 69, Table 3.2: replace the functions in the first column by the functions $x-1, x-2, x-3, x-4$ and $x-5$ (in that order)

p. 71, line 2: change "$x_0 = 0$ and $x_1 = 1$" to "$x_0 = n+1$ and $x_1 = n$"

p. 71, line 4: change "min" to "max" and change "$y - x_i$" to "$x_i - y$"

p. 71, line 5: change "$x_1, x_2, \ldots, x_k$" to "$x_k, x_{k-1}, \ldots, x_1$"

p. 71, line 6: change "and that $x_k \leq n$" to "that is contained in $[1,n]$" (Note: the proof of Theorem 3.21 given in the text is for *ascending* waves.)

p. 84, line 8: change "$(1-a)d$" to "$(1-a)+d$"

p. 88, line 10: change "$AP \cup P_{k-2}$" to "$R(AP \cup P_{k-2}, k)$"

CHAPTER 4

p. 105, line -12: change "k" to "$n+1$"

p. 108, line 16: delete R

p. 109, line 9: change "j" to "ℓ"

p. 111, Theorem 4.9: change "$m\mathbb{Z}^+$" to "$A_{m\mathbb{Z}^+}$"

p. 111, Corollary 4.10: change "$\mathbb{Z}^+ - F$" to "$A_{\mathbb{Z}^+-F}$"

p. 113, line 18: change "the" to "an"

CHAPTER 5

p. 136, line 5: change "k" to "3"

p. 137, line 9: change "w" to "w'"

p. 138, proof: there are 3 occurrences of w that should be w'

p. 151, line 3: change "$\leq$" to "$<$"

CHAPTER 6

p. 177, line 1: change "If" to "if"

CHAPTER 7

p. 190, line -5: change "$\geq$" to "$=$"

p. 192, line -7 and -9: delete "$= S_1$" and "$= S_2$"

p. 196, 7.4: delete the comma after S

CHAPTER 8

p. 205, line -5: change "$O(n^2)$" to "of order n^2"; after "i.e.," add " there exist positive constants b and c such that for n sufficiently large"

p. 205, line -6: change this line to read $bn^2 \leq \min_{\chi}(M_\chi(n)) \leq cn^2$

p. 206, line 1: change "$\frac{n^2}{48} + O(n)$" to "$\frac{n^2}{48}(1+o(1))$"

p. 206, line 10: change "$\frac{n^2}{48} + O(n)$" to "$\frac{n^2}{48}(1+o(1))$"

p. 208, line -4: change "$+ O(n)$" to "$(1+o(1))$"

p. 210, line -9: change "the same color" to "of different colors"

p. 210, line -1: change "$+ O(n)$" to "$(1+o(1))$"

p. 211, line 2: change "$+ O(n)$" to "$(1+o(1))$"

p. 211, line 4: change both occurrences of "$+ O(n)$" to "$(1+o(1))$"

p. 216, lines -15 and -12: change $kn+k-1$ to $kn+k-2$

p. 220, exercise 8.4: change "$O(n^2)$" to "$cn^2(1+o(1))$ for some $c > 0$"

p. 220, exercise 8.6: insert "the proof of" before "Corollary"

p. 221, exercise 8.9: change "Schur triple" to "solution to $\mathcal{L}(k)$"

CHAPTER 9

p. 236, line 10: delete one "is"

p. 242, line 5: insert "$1 + i_1 a + j_1 b = 1 + i_2 a + j_2 b$" after "such that"

p. 251, line 17: change "$\{0, 1, \ldots, r\}$" to "$\{1, 2, \ldots, r\}$"

p. 252, line 6: change "There" to "For every r-coloring of $\mathbb{Z}^+$, there"

p. 256, line -5: insert) after $(2ak+1)$

p. 258, line -8: the last sentence of §9.2's references should be the first sentence of §9.3's references

CHAPTER 10

p. 261, last line: change "if $t \in T$, then $2t \notin T$" to "$t \in T$ does not imply that $2t \in T$"

p. 262, line 2: insert "obtained only" after "sum"

p. 263, lines 3, 5, and 8: change "$n(k;r)$" to "$kn(k;r)$"

p. 263, line 8: change "$\left[\frac{m}{2}, m\right]$" to "$\left(\frac{m}{2}, m\right]$,"

p. 263, lines 17 and 19: change "$(a+d)+D$" to "$(a+d)+\sum_{r\in R\subseteq[1,k]} x_r$"

p. 268, Lemma 10.20: before "then" insert "and if either $D+E=\{d+e : d \in D, e \in E\} \subseteq D$ or $D+E \subseteq E$,"

p. 270, replace the first paragraph of the proof of Theorem 10.24 with the following:

We first show that $doa(D) \geq 3$. Assume, for a contradiction, that $\gamma : \mathbb{Z}^+ \to \{0,1,2\}$ is a 3-coloring without arbitrarily long monochromatic D-diffsequences. Let $s_1 < s_2 < \cdots < s_m$ be a monochromatic D-diffsequence of maximal length. We may assume this diffsequence has color 2. Then $S = \{s_m + j : j \text{ odd}\}$ is void of color 2. Let $S = \bigcup_{i\geq 0} S_i$, where $S_i = \{s_m + 2i(m+1) + j : j \in \{1,3,5,\ldots,2m+1\}\}$ are sets of $m+1$ elements. Define, for $i \geq 0$, $T_i = \{s_m + 2i(m+1) + j : j \in \{2,4,6,\ldots,2m+2\}\}$, which are also sets of $m+1$ elements. Each T_i must contain an element of either color 0 or color 1, for otherwise T_i would be an $(m+1)$-term D-diffsequence of color 2, contradicting the choice of m. Furthermore, each S_i must contain elements of both color 0 and color 1 (since it is void of color 2), for otherwise S_i would be an $(m+1)$-term monochromatic D-diffsequence. Since some color, say color 0, must occur an infinite number of times in the T_i's, there exist $x_{i_1} \in T_{i_1}, x_{i_2} \in T_{i_2}, x_{i_3} \in T_{i_3}, \ldots$, where $i_{j+1} > i_j + 1$, all of color 0. For each $j \geq 1$, let $y_{i_j} \in S_{i_j+1}$ be of color 0. Then $x_{i_1}, y_{i_1}, x_{i_2}, y_{i_2}, \ldots$ is an infinitely long D-diffsequence of color 0, contradicting the existence of m.

p. 275, line 15: insert "long" after "arbitrarily"

p. 282, line 10: change "$(i, i+1, i+2, \ldots, i+j)$" to "$(i, i+1, i+2, \ldots, i+j-1)$"

p. 282, line -8: change "$j = y - x - 1$" to "$j = y - x$"

p. 285, line 7: change "$2(m-1)p - 1$" to "$(2m-1)p - 1$"

p. 288, exercise 9: change each occurrence of "F_0" to "F_1" and each occurrence of "F_1" to "F_2"

p. 288, exercise 10: change "S_3" to "V_3" and "S_4" to "V_4"

p. 290, exercises 10 and 11: change "f" to "Δ" in each problem

NOTATION

p. 293, $AP_{(m)}$: change "Set" to "Family"

p. 294, $T_{a,b}$: change "Set" to "Family"

BIBLIOGRAPHY

p. 301, [66]: insert a comma after "Landman"

p. 302, [91]: change "Isreal" to "Israel"

p. 303, [107]: insert a comma after "Exoo"

p. 310, [232]: change the year to 1968

INDEX

p. 317, Mixed van der Waerden: delete 19, and change 52 to 51.