Handbook of Product Graphs, Second Edition

Errors, Misprints and Notes

May 20, 2018

Errors, misprints, missing references

- Page 68, line 6: replace "Becuase" by "Because".
- Page 108, line 19: replace "$X > 1$" by "$|X| > 1$."
- Page 109, Corollary 9.8: insert "if C has at least one edge" just after "$A \cong B$".
- Page 111, line 2: replace "Theorem 9.7" by "Theorem 9.9".
- Page 111, line -2: replace "anti-automorphism" by "anti-automorphisms".
- Page 112, lines -6 and -5: the right sides of the equations should begin with $\lambda(x)$ rather than $\lambda(y)$.
- Page 112, lines -5 and -4: The part of the end of the proof beginning with 'or' in line -5 should be deleted.
- Page 114, Exercise 9.6: Replace the second sentence by "Show that there is a graph B that is not isomorphic to A, for which $A \times C \cong B \times C$, if A has a connected component with an automorphism of order 2 that reverses its bipartite sets.
- Page 114: add "**Exercise 9.8.** Suppose A and C are bipartite. Show that $A \times C \cong B \times C$ implies $A \cong B$ if and only if B is bipartite."
- Page 114: add "**Exercise 9.9.** Suppose A is a connected bipartite graph with an automorphism α of order 2 that reverses its bipartite sets. Show that A^α is not bipartite."
- Page 246, Proposition 20.8: The proposition holds for τ^*, but not for τ.
- Page 258, line 5: replace "Slutzky" with "Slutzki".
- Page 260, line above Theorem 21.13: replace "but C_3^Δ is" by "but C_4^Δ is".
- Page 305, line 16: replace "$\gamma(G \,\square\, H) = \gamma(G)\gamma(H)$" with "$\gamma(G \,\square\, H) \geq \gamma(G)\gamma(H)$".

- Page 324, lines -17: Insert the following sentence before “Then”: “Furthermore, let $\mathbf{x} \geq \mathbf{y}$ denote the situation that each entry of the vector $\mathbf{x}$ is greater than or equal to the corresponding entry of the vector $\mathbf{y}$.”.
- Page 324, lines -13 and -12: replace “every vertex of G belongs to at least one independent set” by “every vertex v of G belongs to at least one independent set I_i, where the ith component x_i of $\mathbf{x}$ is 1”.
- Page 335, line above Lemma 26.38: replace “$G \to \mathcal{C}_n(G)$” with “$H \to \mathcal{C}_n(G)$”.
- Page 336, line above Lemma 26.40: replace “restriction every” with “restriction to every”.
- Page 336, line -5: replace “but $\chi(\mathcal{C}_3(G)) \geq 3$” with “but $\chi(\mathcal{C}_3(G)) > 3$”.
- Page 339, line 1: the proof becomes more transparent if one insert the following sentence before “This”: “Note that B is the set of all pairs $(a, x) \in I$ for which there exists a pair $(a', x) \in I$ such that $aa' \in E(G)$.”.
- Page 339, definition of C: to make the arguments easier to follow please insert the following line immediately after the definition: “Notice that $C(a) = \{x \in V(H) \,|\, a \in N[A(x)]\}$.”.
- Page 357, last line: the following paper should be added to the list: J. Žerovnik, Perfect codes in direct products of cycles—a complete characterization, Adv. in Appl. Math., 41 (2008), 197–205.
- Page 385, line 17: replace twice “$C_m \times C_n$” with “$C_m \times P_n$”.
- Page 416, line -12: should read: $S(\bigtimes_{\iota \in I} G_\iota) = \square_{\iota \in I} S(G_\iota)$,
- Page 437, line -12: replace “The relationship between the Laplacian of a product and that of the factors is the same as for the adjacency matrix.” by “The relationship between the Laplacian spectrum of a product and that of the factors is very difficult except for the Cartesian product, unless the graphs are regular.”
- Page 452: insert “**Exercise 9.8** Hint: Use Corollary 9.8.”
- Page 452: insert “**Exercise 9.9** Hint: Use Theorem 9.15 and Corollary 9.8.”

Notes

- Chapter 2, Independence number

  Simon Špacapan[1] extended the No-Homomorphism Lemma 2.13 and Theorem 27.13 on the independence number of direct powers of vertex transitive graphs to assertions about the k-independence number. Notice that

[1] Simon Špacapan, The k-independence number of direct products of graphs and Hedetniemi’s conjecture, European Journal of Combinatorics, 32 (2011), 1377-1383

the k-independence number $\alpha_k(G)$ of a graph G is the size of the largest k-colorable induced subgraph of G.

Both the No-Homomorphisms Lemma and Theorem 27.13 hold if $\alpha(G)$ is replaced by $\alpha_k(G)$.

- Chapter 9, Exercises

  Exercise 9.6 was reformulated in the errors part because it was based on a wrong interpretation of Proposition 1 in Hammack (2008), which appears in the abstract of that paper. However, Proposition 1, the main result of the paper, is entirely correct and the basis for Theorem 9.15.

  For correct interpretations compare the new formulation of Exercise 9.6 and the new Exercises 9.8 and 9.9.

- Chapter 31.2, Free product

  It may seem surprising, but the free product $G*H$ of graphs is an isometric subgraph of the weak Cartesian product of infinitely many copies of G and H (Aleksandra Jędrzejaszek, Free Products of Graphs, Master Thesis, AGH Cracow, 2011).