

An introduction to expander graphs

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List of corrections

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Note. The corrections below that refer to the second printing (2021) are indicated with the symbol \star .

Chapter 1

- (1) Page 6, line 5: “the image of γ ” (instead of η).
- (2) Page 6, lines 8 and 9: “even if k is deformed” and “distorsion of k ” (instead of γ).
- (3) Page 8, line 7: actually, there are two “miraculous” values of t , namely $t = 0$ and $t = 1$ (with $\beta = 1$ and $\beta = 0$ respectively).

Notation

- (1) Page 10: item (13) should come before item (11) (which uses the notation $f \sim g$); in item (12), add that $f = O(g)$ is *synonymous* with $f \ll g$.

Chapter 2

- (1) Page 20, exercice 2.1.19: this should have been placed in Section 2.2, since Question (2) is best solved and understood in terms of the metric on the graph.
- (2) Page 29, line –5: “hence $\varpi_{v_0}(\Gamma)$ is a finite tree” (instead of Γ).
- (3) Page 30, line -2 of proposition 2.2.17: the number of paths is $\geq 2^{-12}\alpha^{-4}|V_1||V_2|$, not $\geq 2^{-12}\alpha^4|V_1||V_2|$.
- (4) Page 41, line –9: “edges between two points $x, x \cdot s$ for $s \in S$ ” (thanks to C. Ballantine).

Chapter 3

- (1) Page 62, line –5: “restricted to S ” (instead of O).
- (2) Page 66, line –18: “its norm is then $N^{1/2}$ ” (instead of $|\Gamma|^{1/2}$).
- (3) Page 68, line 2: $M\varphi$ instead of M_φ .
- (4) Page 73, line –6: λ -eigenvalue should be λ -eigenfunction.

Chapter 4

- (1) Page 116, line –9: “are stable under M_s ”.
- (2) Page 117, line 1: “acting on H_- ”.
- (3) \star Page 134, line –4: the formula should be

$$\max_{s \in S} \|\varrho(s)\varphi - \varphi\| \geq \sqrt{\frac{2}{n}} \|\varphi\|$$

(the function φ is not a unit vector).

Chapter 5

- (1) Page 136, lines –3 and –2 and page 137, line 8: $h(V)$ should be $h(\Gamma)$.

Chapter 6

- (1) Page 184, proof of (6.9): the inequalities on line -9 are in the wrong direction. The right inequalities are

$$\alpha^{-1}(ab)^{3/2} \leq E(A, B) \leq \min(ab^2, a^2b) = ab^2,$$

and one then deduces the inequalities which follow on line -7.

- (2) Page 193, Corollary 6.4.3: after (6.16), instead of “for $n \leq \tau \log(p/2)$ ”, read “for some $n \asymp \tau \log(p/2)$ ”; the proof gives this result after inspection, or compare with Corollary 4.6 in reference [70]. (Thanks to E. Fuchs, A. Tran and M. Litman for this correction and the next.)
- (3) Page 195, Corollary 6.4.5: after (6.20), instead of “where”, read “for some”; this is what is proved in this case (see page 196).