

MAPPING DEGREE THEORY

Graduate Studies in Mathematics 108

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TYPOS & COMMENTS

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1. Ch. II §4, II.3.4, proof of the Sard-Brown Theorem for smooth mappings (c), p. 65, l. -4 *should read*:
for any $x \in C_i \cap K$ and $y \in K$.

2. Ch. II §4, II.4.3, proof (c), p. 73, l. 14,15 *should read*:

$$E \supset \{(x, u) \in \nu M : \|x - z\| < \frac{1}{2}\varepsilon, \|u\| < \frac{1}{6}\varepsilon\},$$

and the latter set is an open neighborhood of $(z, 0)$.

3. Ch. II §5, II.5.3, proof, p. 78, l. -2,-1 *should read*:

$$\begin{aligned} \|f(x) - H_t(x)\| &= \|f(x) - ((1-t)f(x) + tg(x))\| \\ &= t\|f(x) - g(x)\| < \varepsilon(x) = \text{dist}(f(x), \mathbb{R}^n \setminus U), \end{aligned}$$

4. Ch. III §3, Exercises and problems, Number 5, p. 113, l. 13. *should read*:

mappings $f : \mathbb{S}^m \rightarrow \mathbb{S}^m$ and $g : \mathbb{S}^n \rightarrow \mathbb{S}^n$, their

5. Ch. III §7, III.7.3, statement, p. 134, l. -3, and Index, p.242, second column, l-9, *should read*:

Perron-Frobenius Theorem

6. Ch. IV §5, IV.5.8. (2), statement, p. 169, l. 11, *should read*:

$f : S \rightarrow T$ be a homeomorphism.

7. Ch. IV §5, Exercises and problems, Number 1, p. 170, l. -15,-14. The problem is correct, but the functions f_i in (1) are rather bounded. Thus to help the reader *it should read*:

... and odd continuous function $f_i : \mathbb{S}^m \rightarrow [-2, 2]$...

8. Ch. V §4, V.4.1, proof, p. 201, l. 9. The assertion that $\deg(g \times g) = +1$ is right, but notations might be misleading. The point is that g reverses orientations restricted to $f^{-1}(a)$ and restricted to $f^{-1}(b)$, hence the product preserves. Now, what is important here is that g *does the same on both inverse images*, be it preserving or reversing orientations. This is a general fact, because any diffeomorphism h of \mathbb{S}^{2m-1} does on all inverse images what it does on \mathbb{S}^{2m-1} , as the following commutative diagram explains.

$$\begin{array}{ccc} \zeta_{\mathbb{S}^{2m-1}, x} & \xrightarrow{\cong} & \zeta_{f^{-1}(a), x} \oplus \zeta_{\mathbb{S}^m, a} \\ d_x h \downarrow & & \downarrow d_x h| \oplus \text{Id} \\ \zeta_{\mathbb{S}^{2m-1}, h(x)} & \xrightarrow{\cong} & \zeta_{h(f^{-1}(a)), h(x)} \oplus \zeta_{\mathbb{S}^m, a} \end{array}$$