

ERRATA AND MISPRINTS FOR BOOK "DIFFEOLGY"

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ref. <http://math.huji.ac.il/~piz/documents/DBlog-Errata.pdf>

Misprints and Errata in Articles.

Art. 1.54, Page 30, (\diamond) line 2: read " $P : U \rightarrow X'$ ". In Proof, line 3, read "a plot P in X' ".

Art. 1.57, Page 34, line 5: read " $\mathcal{C}^\infty(X, X')$ " instead of " $\mathcal{C}^\infty(X, Y)$ ".

Art. 2.15, Page 57, line 4: read $f^{-1} \circ P$ instead of $f^{-1} \circ P'$.

Art. 2.16, Page 59, line 3: read " $P(0) = x'$ " instead of " $P'(0) = x'$ ".

Art. 3.12, Page 69, line 3: read " $L(E, E') = L^\infty(E, E')$ " instead of " $L^\infty(E, E') = L^\infty(E, E')$ ".

Exercise 72, Pages 74-75 and Solution to Exercise 72, p. 387: The theorem attributed to Boman is actually a generalization of the Boman's theorem due to Richard Hain and Alfred Frölicher in:

- (1) Richard M. Hain, *A characterization of smooth functions defined on a Banach Space*, Proc. Amer. Math. Soc. 77 (1979), pp. 63–67.
- (2) Alfred Frölicher, *Applications lisses entre espaces et variétés de Fréchet*, C. R. Acad. Sc. t. 293, Paris 1981.

Art. 4.8, Page 86, line 12: read "from E to X " instead of "from E to M ".

Art. 6.27, Page 146, line 4: read

$$+ \int_{a_1}^{b_1} dx_1 \dots \int_{a_{p-2}}^{b_{p-2}} dx_{p-2} F[x_1 \dots x_{p-2}](a_{p-1})(a_p),$$

Art. 6.32, Page 149, line 10 (and in Proof, line 3): read " $f^* : \Omega^k(X') \rightarrow \Omega^k(X)$ ".

Art. 6.70, Page 193, line 2 before end: read

$$\int_{\mathbb{I}^p} (\delta\alpha)(\sigma)(r)(e_1) \cdots (e_p) dr_1 \wedge \cdots \wedge dr_p,$$

Art. 6.91, Page 212, line 4: read " $\text{Paths}(X, x_0, \star)$ " instead of " $X \text{ Paths}(X, x_0, \star)$ ".

Art. 8.5, Page 236, line 16: read " $\sigma(x, y) \cdot \sigma(y, z) = \sigma(x, z)$ " instead of " $\sigma(x, y) \cdot \sigma(x, z) = \sigma(x, z)$ ".

Date: September 22, 2014.

Art. 8.42, Page 293, line 4, read “ $\text{class}_\omega^*(\lambda) = \mathcal{K}\omega$ ” instead of “ $\text{class}^*(\lambda) = \mathcal{K}\omega$ ”.

Art. 9.12, Page 311, § 3) line 1, read “ \mathcal{G}^*/Γ ” instead of “ \mathcal{G}/Γ ”.

Art. 9.20, Page 321 (and in Proof, line 9), read “ δr ” instead of “ δv ”.

Misprints and Errata in Proofs.

Proof/Art. 1.32, Page 17, line 7: read “ $f^*(\mathcal{D}') \subset \mathcal{D}$ ” instead of “ $\mathcal{D} \subset f^*(\mathcal{D}')$ ”.

Proof/Art. 1.43, Page 24, line 6: read “Thus, $f \circ P$ ” instead of “Thus, $P \circ f$ ”.

Proof/Art. 1.73, Page 44, line 8: read “neighborhood W of s ” instead of “neighborhood W of r ”. Line 16 read $W' = Q^{-1}(V) \cap W$ instead of $V' = Q^{-1}(W) \cap V$.

Proof/Art. 1.74, Page 45, line 3: read $f^*(\mathcal{F}')$ instead of $f^*(\mathcal{F})$.

Proof/Art. 1.76, Page 46, line 6: read $\pi_{\mathcal{F}} \circ Q$ instead of $\pi \circ Q$.

Proof/Art. 2.2, Page 52, line 2: read $Q = f \circ P : P^{-1}(A) \rightarrow Y$ instead of $Q = f \circ P : P^{-1}(A) \rightarrow X$.

Proof/Art. 2.10, Page 55, line 5 and 13: read $f : A \rightarrow X'$ instead of $f : A \rightarrow X$.

Proof/Art. 4.3, Page 80, D3 line 7: read “ $F^{-1} \circ P \circ Q : (P \circ Q)^{-1}(F(U)) \rightarrow U$ ”.

Proof/Art. 4.6, Page 83, line 9: read “ $\pi \circ \phi = F \upharpoonright V$ ” instead of “ $F \circ \phi = F \upharpoonright V$ ”.

Proof/Art. 4.9, Page 88, last centered formula, line 4 before end: read “ $X \in \mathcal{H}_{\mathbb{R}} - \{0\}$ ” instead of “ $X \in \mathcal{H} - \{0\}$ ”.

Proof/Art. 4.11, Page 91, line 15 and 17: read “ $j_k^{-1}(\zeta_\alpha)$ ” and “ $j_k^{-1}(e_k)$ ” instead of “ $j^{-1}(\zeta_\alpha)$ ” and “ $j^{-1}(e_k)$ ”. And Page 92, line 4: read “ $\mathcal{H}_{\mathbb{C}}$ ” instead of “ \mathcal{H} ”.

Proof/Art. 4.16, Page 97, line 18: read “ ϕ ” instead of “ ϕ_i ”.

Proof/Art. 5.9, Page 108, last line: read “ $\text{comp}_{\#}(f)$ ” instead of “ $\text{comp}(f)$ ”.

Proof/Art. 6.15, Page 134, lines 5, 6 and 7, read

$$\begin{aligned} \mathbf{ab} &= k \sum_{\sigma' \in \mathfrak{S}_{p+q}} \frac{\text{sgn}(\sigma')}{\text{sgn}(\epsilon)} \times B(x_{\sigma'(1)}) \cdots (x_{\sigma'(q)}) \times A(x_{\sigma'(q+1)}) \cdots (x_{\sigma'(q+p)}) \\ &= \frac{k}{\text{sgn}(\epsilon)} \sum_{\sigma' \in \mathfrak{S}_{p+q}} \text{sgn}(\sigma') \times B(x_{\sigma'(1)}) \cdots (x_{\sigma'(q)}) \times A(x_{\sigma'(q+1)}) \cdots (x_{\sigma'(q+p)}) \\ &= \text{sgn}(\epsilon) \times \mathbf{ba}. \end{aligned}$$

Proof/Art. 6.69, Page 192, line 3 and 4: read

$$\begin{aligned} &= \sum_{k=1}^p (-1)^k \left[\int_{\mathbb{I}^{p-1}} j_k(0)^*(\alpha(\sigma)) - \int_{\mathbb{I}^{p-1}} j_k(1)^*(\alpha(\sigma)) \right] \\ &= \sum_{k=1}^p (-1)^k \left[\int_{\mathbb{I}^{p-1}} j_k(0)^*(\mathbf{a}) - \int_{\mathbb{I}^{p-1}} j_k(1)^*(\mathbf{a}) \right] \end{aligned}$$

Proof/Art. 6.70, Page 195, line 4 before end: read

$$= \sum_{k=1}^p (-1)^{k-1} \frac{\partial \mathbf{a}_k(0, r)}{\partial r^k} dr^1 \wedge \dots \wedge dr^k \wedge \dots \wedge dr^p$$

Proof/Art. 8.11, Page 244, line 6: read " $[x', k_x \circ g_x^{-1} \circ h_x^{-1}(t')]$ " instead of " $[x', k_x \circ g_x^{-1} \circ h_x^{-1}(t')]$ " (a closing bracket was missing).

Proof/Art. 8.30, Page 272, line 14: read " $(k(\tilde{x}), f(k(\tilde{x})))$ " instead of " $(k(\tilde{x}), f(k(\tilde{x})))$ " (a closing parenthesis was missing).

Proof/Art. 9.11, Page 311, line 2, read " $\hat{p}^*[\mathcal{K}(d\alpha)] =$ " instead of " $\mathcal{K}(d\alpha) =$ ".

Proof/Art. 9.12, Page 313, line 1, read " $\mu'(y) - \mu'(x) = h_r^* \circ \mu(y) - h_r^* \circ \mu(x)$ ".

Proof/Art. 9.23, Page 324, the line before the last line: read " $\pi/2$ " instead of " $2\pi/3$ ".

Proof/Art. 9.26, Page 326, § a) line 1: read "holonomy Γ " instead of "holonomy of Γ ".

Proof/Art. 9.27, Page 332, § 5. line 4: read " $\hat{0}^*(\lambda)$ " instead of " $\hat{0}^*(\alpha)$ ".

Proof/Art. 9.34, Page 348, line 9: read " $u' = \phi'(t)$ ".

Misprints and Errata in Solutions of Exercises.

Solution to Exercise 2, Page 355, line 9: read "the axiom D2 is satisfied" instead of "the axiom D2' is satisfied".

Solution to Exercise 5, Page 357, line 13: read " $F'(x_0 + q) = F'(x_0)$ ".

Solution to Exercise 15, Page 362, § 2), line 5: read " $\lim_{t \rightarrow 0^\pm} j^{(p)}(t) = 0$ ".

Solution to Exercise 24, Page 365, line 14: read " $\lim_{x \rightarrow 0} f(x) = 0$ " instead of " $\lim_{x \rightarrow 0} = 0$ ".

Solution to Exercise 27, Page 366, line 4 before end of page: read " $\text{acos}_k :]0, 1[\rightarrow]k\pi, \pi + k\pi[$ " and " $\text{asin}_k :]0, 1[\rightarrow] - \pi/2 + k\pi, \pi/2 + k\pi[$ ".

Solution to Exercise 62, Page 383, line 19: read "Note that this construction gives an idea about the difference between a *smooth relation* and a *smooth map* from a diffeological space X to another X' " (a few words were missing)".

Solution to Exercise 76, Page 389, § 2) line 5: read " $\beta \mapsto \beta \circ T_r^{-1}$ "; par. 3) line 3: read " $\mathcal{E}_1^1 = \{(1, u_2) \mid u_2 \in \mathbf{R}\}$ ".

Solution to Exercise 80, Page 391, line 5 before end: read " $f \circ P \in \mathcal{C}^\infty(\mathbf{R}^n, \mathbf{R})$ " instead of " $P \circ F \in \mathcal{C}^\infty(\mathbf{R}^n, \mathbf{R})$ ".

Solution to Exercise 120, Page 410, expression of $\sigma(t)(X(\theta))$, the minus sign $(-)$ in the matrix of rotation $2\pi t$ is misplaced, read

$$\sigma(t)(X(\theta)) = \begin{pmatrix} \cos(2\pi t) & -\sin(2\pi t) \\ \sin(2\pi t) & \cos(2\pi t) \end{pmatrix} \begin{pmatrix} \cos(\theta) \\ \sin(\theta) \end{pmatrix} = \begin{pmatrix} \cos(2\pi t + \theta) \\ \sin(2\pi t + \theta) \end{pmatrix}.$$

Solution to Exercise 136, Page 419, last centered formula, read

$$\int_{\sigma} \omega = \sum_{i=1}^4 \int_{\gamma_i} \lambda = \chi_4(1) - \chi_1(0) = \chi_4(1) \in \Gamma.$$

References

[DBook] Patrick Iglesias-Zemmour *Diffeology*, Mathematical Surveys and Monographs, 185. Am. Math. Soc., Providence, 2012.

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