Errata for the book

Low-dimensional geometry:
from euclidean surfaces to hyperbolic knots

A somewhat frustrating fact of life is that, however hard you try, it seems impossible to get rid of all misprints and minor mistakes in a math text. This one is no exception. I am very grateful to Maria Dyachkova, Laure Flapan and, in particular, the Annapolis group (Mark Kidwell, Mark Meyerson, Dave Ruth and Max Wakefield) for pointing out a large number of them. Here is a current list of misprints and corrections. A negative line number means that one should count from the bottom of the page.

Francis Bonahon

Page 5, line 3: \(d(x, y) = |x - y|\).

Page 13, line -8: \ldots at the junction of \(\gamma\) and \(\gamma'\).

Page 15, line 3: \(\varphi(x) = (\lambda x, \lambda y)\)

Page 18, line 3: \(\ldots = \left| \ln \frac{y_1}{y_0} \right|\).

Page 20, Figure 2.4: One needs to exchange \(\varphi_2 \circ \varphi_1(P)\) and \(\varphi_2 \circ \varphi_1(Q)\).

Page 24, line 13: \ldots plane is of one of the two types \ldots

Page 39, line -5: \ldots on opposite sides of \(bpQ\), in the sense \ldots

Page 27, line 18 \(z = -\frac{d}{c}\).

Page 43, lines 9–10: \ldots with euclidean radius \(y \sinh r\) and with euclidean center \((x, y \cosh r)\).

Page 43, line -13: \(\text{Area}_{\text{hyp}}(D) = \int \int_{\mathcal{D}(D)} \frac{4}{(1 - x^2 - y^2)^2} \, dx \, dy\).
Page 43, line -10: \( \cdots = \iint_D f(\Phi(x, y)) \det D_{(x, y)} \Phi \, dx \, dy. \)

Page 43, line -8: \( \ldots \) the determinant \( \det D_{(x, y)} \Phi \) of \( \ldots \)

Page 43, line -7: \( \ldots \) differential map \( D_{(x, y)} \Phi. \)

Page 43, line -4: \( P = (0, 1) = \Phi^{-1}(0). \)

Page 45, line -9: \( \| \vec{v} \|_{\text{proj}} = \frac{d_{\text{euc}}(A, B)}{2d_{\text{euc}}(A, P)d_{\text{euc}}(B, P)} \| \vec{v} \|_{\text{euc}}. \)

Page 45, line -2: \( d_{\text{proj}}(P, Q) = \frac{1}{2} \log \frac{d_{\text{euc}}(A, Q)d_{\text{euc}}(B, P)}{d_{\text{euc}}(A, P)d_{\text{euc}}(B, Q)}. \)

Page 51, line 21: \( \ldots \) each plane \( \Pi'' \) orthogonal \( \ldots \)

Page 81, line 15: \( \ldots \) delimited by four edges, has no vertex \( \ldots \)

Page 83, line -4: \( \ldots \) by spherical isometries.

Page 84, line 14: \( \ldots \) of the product \( X \times X. \)

Page 90, line 2: \( \ldots \) restriction \( \ldots \)

Page 93, line 15: \( \varphi_3(a, y) = (b, c + d - y). \)

Page 99, line -3: \( \ldots \) of \( h \) and \( k \) and \( \ldots \)

Page 110, lines -4 and -3: \( \frac{\partial w}{\partial x} = -2\pi \, \text{sech} \, t \, \sin(2\pi x), \quad \frac{\partial w}{\partial y} = 2\pi \, \text{sech}^2 \, t \, \cos(2\pi x), \quad \frac{\partial u}{\partial x} = 2\pi \, \text{sech} \, t \, \cos(2\pi x), \) and \( \frac{\partial u}{\partial y} = 2\pi \, \text{sech}^2 \, t \, \sin(2\pi x). \)

Page 111, line 3: \( \int_{s_1}^{s_2} \| D_{z(s)} \rho(z'(s)) \|_{\text{euc}} \, ds \)

Page 163, line -12: \( \{ z \in \mathbb{H}^2; \, n \leq \text{Re}(z) \leq n + 1 \} \)

Page 163, line -6: \( \ldots \) the vertical half-lines \( \text{Re}(z) = a_n \) and \( \text{Re}(z) = a_{n+1}, \ldots \)

Page 164, line -13: \( \ldots \) the vertical half-line of equation \( \text{Re}(z) = a_\infty, \ldots \)

Page 164, line -9: \( \ldots \) along the line \( \text{Im}(z) = a_\infty \ldots \) [[Obviously, I am challenged when it comes to \( \text{Im} \) and \( \text{Re} \)!]]
Page 166, line 6: ... one easily sees that $\varphi$ is bijective.

Page 166, line 7: ... that $\varphi$ is actually ...

Page 183, Exercise 6.13: $U_0 = \varphi_2^{-1} \circ \varphi_4^{-1}(V_0)$

Page 188, line -6: $\leq \bar{d}(\bar{P}, \bar{Q}) + \bar{d}(\bar{Q}, \bar{R}) + 2\varepsilon$

Page 188, line -4: Since this holds for every $\varepsilon > 0$, ...

Page 191, line 6: Also, let $\bar{Q}$ denote the point of $\bar{B}_d(P, \varepsilon)$ corresponding to $Q \in B_d(P, \varepsilon)$.

Page 191, line 11: ... the quotient map $X \rightarrow \tilde{X}$ is ...

Page 191, line 13: Let $Q, Q' \in B_d(P, \varepsilon)$.

Page 193, line 13: ... so that $\gamma_{ij} = \gamma_j^{-1}$. As a consequence, the rule $j \mapsto i_j$ defines ...

Page 200, line 5: Since $Q \in \beta_{P_0, \gamma}(P_0)$, ...

Page 202, line 5: ... a group of isometries ...

Page 202, line -5: for every $\gamma \in \Gamma$, ...

Page 203, line 5: $\gamma(P_0) \in B_d(P_0, \varepsilon)$

Page 204, line 6: to construct an isometry

Page 236, line 4: $\varphi(z, u) = \left( az + b \overline{cz + d} \frac{|cu|^2}{c(cz + d)(|cz + d|^2 + |cu|^2)}, \ldots \right)$

Page 360, line 12: ... $f(x)$ is arbitrarily close to $f(x_0)$ ...

Page 360, line 13: ... sufficiently close to $x_0$. 