Errata

In Chapter 1:

In Chapter 2:

In Chapter 3:

32.2: It should be noted that the 'pencil intersection' topology PI has to be contained in any topology that turns the projective completion into a topological plane. As we are dealing with compact Hausdorff spaces, this implies that PI is the only possible topology for the point space. The one-point compactification of the line space is also the only reasonable topology for the line space of the projective completion.

This is needed in 32.5 and 42.10 to make sure that the given topology on P coincides with the topology constructed from the affine plane.

32.5: The proof needs an additional argument to show that the topology on P is the 'pencil intersection' topology PI with respect to the affine plane on $P\backslash L$; see the remarks on 32.2.

34.4: In part 2) on page 189/190, it is impossible to describe both one-parameter groups E and Ξ by the same formula. Instead, the definitions should be

$$\epsilon_t(re^{i\phi}) = \frac{r\cos\phi}{\cos\psi}e^{s(\psi-\phi)}e^{i\psi}, \quad \text{where } \tan\psi = \tan\phi + t$$

and

$$\xi_u(re^{i\phi}) = \frac{r\cos\phi}{u\cos\psi}e^{s(\psi-\phi)}e^{i\psi}, \quad \text{where } u = e^t \text{ and } \tan\psi = u^2\tan\phi.$$

In the subsequent part 3), the formula at the end should be

$$\xi_u^{-1}\epsilon_t\xi_u = \epsilon_{u^{-2}t}.$$

In (34.7a), where this formula is applied, the correction results in an exchange of the two generators of the infinite cyclic group, which does no harm.

In Chapter 4:

42.10: The proof needs an additional argument to show that the topology on P is the 'pencil intersection' topology PI with respect to the affine plane on $P\backslash L$; see the remarks on 32.2.

43.8: The hypothesis that the map $t \mapsto f(s,x,t)$ of $\mathbf{R}^n$ be injective should be made for every $s, x \in \mathbf{R}^n$ (and not only for $s = 0$). This is needed in the last paragraph but one of the proof. The error does not affect the applications of (43.8) made within the book.

There is another gap in the proof, but that one can be remedied. The third paragraph tacitly uses that lines defined by $t = 0$ pass through the origin $(0,0)$. This is not implied by the assumptions. It can be enforced, however, by preceding the proof given with one further step of transformation. One wants to achieve that $f(s,0,t) = t$ for all s, and one

uses the inverse of the homeomorphism $(s,t) \mapsto (s, f(s,0,t))$. Let this inverse be given by $(s,t') \mapsto (s, \psi(s,t'))$; then one has to replace f by

$$\tilde{f}, \qquad \text{where } \tilde{f}(s,x,t') = f(s,x,\psi(s,t')).$$

Of course, it is also possible to do this transformation explicitly whenever one applies (43.8). It is usually quite clear what has to be done; see, e.g., the proof of (74.3).

In Chapter 5:

In Chapter 6:

In Chapter 7:

In Chapter 8:

In Chapter 9: