16. Errata

Introduction

In this new Chapter (version from 10.11.2023) we collect all errata which have been collected over the last decades.

31.12.02 There are some misprints in Chapter 13:

page 457: In Definition 13.9 (1) The sentence in brackets should be (In particular $G \in \mathcal{G}$, if G contains a normal subgroup H with $H \in \mathcal{G}$ and G/H amenable); Place the semicolon at the end of the sentence correctly, delete the blank. (There are more correction needed, see entry from 18.02.09 and 12.08.11.)

page 466: In Lemma 13.33 replace : by \colon.

page 468: $A_{i_0} \in M_m(\mathbb{Z}G_{i_0})$ should be $A_{i_0} \in M(m, n, \mathbb{Z}G_{i_0})$ in line 12↓.

page 468 A point is missing after ψ_{i_0} in line 14↓.

page 468: Replace in line 3↑ $(\det(r_B^{(2)}))^2$ by $\sqrt{\det(r_B^{(2)})}$.

page 472: Maybe add an explanation at the end why A_n has integral coefficients.

08.04.03 Michael Weiermann pointed out the following:

The proof of Theorem 7.4 (2) for $\mathcal{BF}_d$ is not correct. It works only for $[G : H] < \infty$ as it stands. One should show that $E_0 \to E \to BG/H$ is a fibration and then apply Lemma 6.66

08.04.03 There is a misprint in Example 7.21 on page 302 in lines 10↓. It should be $a_i^k b_i a_i^{-k} = b_i^{r_i^k}$ for $i = 0, 1$.

29.08.03 Misprint on page 339 in Example 9.7
"the operator $r_{g^{-1}}$" should be "the operator r_g".

31.08.03 There is a misprint "cocomapct" in Theorem 3.183 on page 201

05.09.03 On page 236 line 2↑ "amenable" must be replaced by "infinite amenable".

06.09.03 In Definition 9.12 on page 341 replace in the title trace by dimension.

13.09.03 In Theorem 6.80 (v) on page 278 one should add "for all $p \geq 0$" in the sentence about the assumption of the bijectivity of $H_p(f; \mathbb{C})$.

18.10.03 In Lemma 13.11 (2) on page 458 it must be a sequence of normal subgroups and each quotient G/G_i must be in $\mathcal{G}$.

30.10.03 In Theorem 14.40 on page 499 one needs for *all* subgroups of finite index that they are Hopfian. At least the proof does not work if this is only required for normal subgroups of finite index, an extra argument would be needed.

28.09.04 Remove the box at the end of Definition 6.86 on page 282. Check the same for other definitions.

10.03.05 In Example 14.28 on page 494 the upper bound $t \cdot 2^n$ should be replaced by $t \cdot 2^{n+1}$. Compare with the Ph.D. thesis of M. Schmidt, Proposition 5.4.

06.04.05 In view of an email by Jean-François Lafont it seems to be more appropriate to replace the last sentence before Subsection 14.2.6 on page 501 by:

Conjecture 14.45 suggests that one should not look among aspherical locally symmetric spaces of non-compact type if one want to find a counterexample to Conjecture 14.1, see Lemma 5.10 and equations (5.13) and (5.15).

10.03.06 On page 398 in the second line it should be assertions (1) and (3), not (2) and (3).

12.05.06 There is some confusion in the proof and the citations there of Theorem 9.54, whether the Bass Conjecture for $\mathbb{Z}G$ or $\mathbb{C}G$ ic concerned, at least in the paper by Farrell-Linnell [197].

05.08.07 Igor Mineyev points out:

On page 392, Lemma 10.45 (2), the map τ should probably be defined as

$$\tau(a) = tr[\rho_+(a) - \rho_-(a)]$$

instead of $\tau(a) = tr(\rho_+(a)) - tr(\rho_-(a))$, since $tr(\rho_+(a))$ might be infinite.

05.08.07 Igor Mineyev points out:

I do not quite understand the proof of Lemma 10.47 on page 393. It says: one easily checks that $p_{\ker(a)}$ and $p_{\ker(b)}$ agree on $\ker(a-b)$. What if we take three 1-dimensional subspaces A, B, C in a 2-dimensional space H, which pairwise intersect at 0. Let a be the map with kernel A and image C, and b be the map with kernel B and image C. Then restrictions of both a and b to C is identity, therefore C is a subspace of $\ker(a-b)$. But the orthogonal projections of C to $A = \ker(a)$ and to $B = \ker(b)$ are different. So this seems to be a counterexample to the statement in the proof.

This problem occurs already in the PHD-thesis of Holger Reich in Lemma 6.6.

18.02.09 Proposition 13.39 on page 469 is wrong as stated, one needs to assume that H is normal in G and G/H is amenable. The proof for the more general case, where G/H is an amenable discrete homogeneous space does not go through, one needs the stronger condition above. The problem is the claim that q_n is H-invariant in line 6 on page 470, this is only true if H is a normal subgroup of G since then the preimage of a subset of G/H under the projection $G \to G/H$ is a (left) H-invariant subset of G.

20.02.09 The proof on page 474 of assertion (7) of Lemma 13.45 ist not quite correct. Der Faktor $\frac{1}{|K|}$ has to be appear in the exponent, since we consider the determinant and not the logarithm of the determinant. The correct proof can be found in the joint paper with Sauer and Wegner which appeared in 2010.

26.02.09 Clara Löh points out that the proof in [35] of Theorem nF.6.5 on page 307 is not correct but the original proof in [261] is correct, see the beginning of page 504.

06.11.10 There is the word normal missing in Lemma 13.11 (2) on page 458, the G_i-s have to be normal subgroups.

12.08.11 Schick has put on the arXive new versions of the following papers because of an Erratum:

Approximating L2-invariants, and the Atiyah conjecture: arXiv:math/0107049v3 [math.GT]
Integrality of L2-Betti numbers: arXiv:math/0001101v4 [math.GT]
L2-determinant class and approximation of L2-Betti numbers: arXiv:math/9807032v2 [math.GT]

In particular for the third paper there is an erratum concerning extension with amenable groups, see also the entry from 18.02.09.
So in particular in Definition 13.9 (1) on page 457 we have to discard the first two sentence and essentially leave the third, i.e., we should write:
If G contains a normal amenable subgroup $H \subset G$ with $G/H \in \mathcal{G}$, then we have $G \in \mathcal{G}$.
Moreover, one has to adapt Subsection 13.2.4, mainly the proof of Proposition 13.39 on page 469.

27.05.13 On page 155 on line 10↓ the exact sequence does not seem to be correct. The summand C_p in $C_p \oplus \ker(x_p)$ should be replaced by $C_p/\operatorname{im}(x_{p+1})$ and j comes from the projection $C_p \to C_p/\operatorname{im}(x_{p+1})$.

11.02.14 In Conjecture 13.1 on page 453 the G-CW-complex X of finite type should be free.

22.10.14 The reference before Definition 10.21 on page 379 should be changed from [463] to [462].

09.11.15 There is a very bad misprint in Theorem 13.3 (1) on page 454. The quotients G/G_i, not the subgroups G_i, must be of det $\geq$ 1-class. (Further necessary corrections about this theorem appear below.)

14.08.23 The reference [346, Theorem 0.6] before Theorem 4.3 on page 216 should be [346, Theorem 0.7].

07.11.23 From discussions with Bin Sun and some of the items above the following modifications of Theorem 13.3 are necessary

Theorem 13.3 (1) one has to replace G_i by G/G_i

One should say in Theorem 13.3 (2)

If the group G belongs to $\mathcal{G}$, then G is of det ≥ 1 class.
and just drop the part
and satisfies the Approximation Conjecture 13.1.