Corrections and additions to

Polytopes, rings, and K-theory

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If you should find a mistake in our book, mathematical or typographical, please let us know by e-mail to

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p. 4, l. 10 $\alpha : V \rightarrow \mathbb{R}$
p. 10, l.B, l. 1 set $\rightarrow$ sets
p. 10, l. –1 A subset $C$
p. 13, l. –16 $C = H_{X_1}^+ \cap \cdots \cap H_{X_n}^+ \subseteq V$
p. 29, l. –19 $P'_n \rightarrow P_n$

same page, l. –11 Delete $P$ from $P = \text{conv}(F, x)$.

p. 30, Thm. 1.54, l. 3 $\Gamma \rightarrow \Sigma$

same page, l. –8 $\mathbb{R}_+ D, D \in \Sigma'$

p. 31, l. 5 connected $\rightarrow$ convex
p. 33, l. –10 $n = \# \text{vert}(\Pi)$

same page, l. –3 $f$ is the support function of $\Pi'$.

p. 56, proof of 2.16(d) $\implies$ (c), dimension $d \rightarrow$ dimension $r$
p. 71, l. –1 \( v \equiv \pm q \; (p) \) or \( vq \equiv \pm 1 \; (p) \)

p. 86, Exerc. 2.17 add the hypothesis: \( P \) different from the unit simplex

p. 139, l. –4 Corollary 2.35(b) \( \rightarrow \) Proposition 2.35(b)

Chapter 4 The definition of monomial ideal was forgotten. It is an ideal in a monoid algebra \( R[M] \) generated by elements of \( M \).

p. 137, Theorem 4.32 Replace \( -- \) in (b) and (c) by \( -- \)

p. 147, Class groups of monoid algebras, l. 2 monomial ideal in \( R \rightarrow \) monomial ideal in \( R[M] \)

p. 198, Notes to Ch. 5 The main source for Section 5.D is W. BRUNS AND J. GUBELADZE, Polytopal linear groups, \( J. \) Algebra 218 (1999), 715–737.

p. 200, Theorem 6.1, l. 2 all maximal \( M \)-sequences in \( I \)

p. 207, l. 1 \( \varphi_m \rightarrow \varphi_{m+1} \)

p. 213, Example 6.27(a) \( \omega_R = X_1 \cdots X_m R \)

p. 214, l. –11 \( \Ext_S^{n-d}(\omega', \omega_S) = R \)

same page, l. –10 \( \omega' = \Ext_S^{n-d}(R, \omega_S) \)

same line \((n - d)\)th total Betti number

p. 180, l. –2 \( y \in M \rightarrow y \in \widetilde{M} \)

p. 215, l. 1 \( \Ext^d_R(\kappa, \omega_S) \rightarrow \Ext^d_R(\kappa, \omega') \)

same page, l. 4 \( \Ext^d_R(\kappa, \omega_S) \rightarrow \Ext^d_S(\kappa, \omega') \)

p. 217, (6.7) Replace \( -- \) by \( -- \)

p. 217, l. –14 insert space after “splits”

p. 231, Theorem 6.53 In (a)(iii) \( r = \rank M \).

p. 247, Exercise 6.11 Delete “normal” from the hypothesis.
p. 247, Exercise 6.15 replace $d$ by $r$ (the number of factors in the denominator of $F(t)$).

p. 316, 8.41, l. 5 rank $d \rightarrow$ rank $\geq d$

p. 325, l. -4 Lopez $\rightarrow$ Logar

p. 346, l. 4 suslin $\rightarrow$ Suslin

p. 350, l. -14 quillen $\rightarrow$ Quillen

p. 393, l. 17 totaro $\rightarrow$ Totaro

p. 405, l. -7 $dt \rightarrow dT$

p. 426, Exercise 10.5 Franchisco Santos suggested the following fast construction of the “bordism” polytope $\hat{P}$. Let $Q \subset \mathbb{R}^n$ be any support polytope for a projective unimodular triangulation $\mathcal{F}$ of the fan $\mathcal{N}(P)$. Then the polytope

$$\hat{P} = \text{conv} \left( (P, 0), (Q, 1) \right) \subset \mathbb{R}^{n+1}$$

has all the properties mentioned in the exercise. In fact, one wants that the vertices of $\hat{P}$, corresponding to the vertices of $Q$, are simple (and, hence, unimodular). But if this is not the case then the polytope $R_h = \hat{P} \cap (\mathbb{R}^n, h)$ with $h \in (0, 1)$ is not combinatorially equivalent to $Q$. On the other hand, $\mathcal{N}(R_h) = \mathcal{N}(P + Q)$ and $\mathcal{N}(P + Q)$ is the smallest common subdivision of $\mathcal{N}(P)$ and $\mathcal{N}(Q)$ (i.e., the intersection of $\mathcal{N}(P)$ and $\mathcal{N}(Q)$; see p. 34). In our situation, the latter condition means $\mathcal{N}(P + Q) = \mathcal{N}(Q)$.

p. 427, l. 13 show $\rightarrow$ Show

p. 458 Add to index entry polytope the subentry integrally closed, 73