

**ERRATA AND MINOR ADDENDA
FOR
COHEN-MACAULAY REPRESENTATIONS**

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These are errata for our book, *Cohen-Macaulay Representations*, published by AMS in May 2012. Readers are cordially invited to alert us to other goofs, omissions, or falsehoods not listed below.

- p. xvii, line 5, replace “Sean” with “Shawn”. (Sorry, Shawn!)
- p. 14, line -17, replace the second $V(R)$ with $V(\widehat{R})$, so it reads “. . . we consider $V(R)$ as a subsemigroup of $V(\widehat{R})$.”
- p. 17, line 5, replace “the two remaining sections” with “the next two sections”.
- p. 71, Proposition 5.18: The assertion that the functors \mathcal{F} and \mathcal{G} form an adjoint pair is incorrect, as can be seen from the fact that the Hom-sets on one side are finite-dimensional vector spaces, while on the other they are not. The second half of the sentence (“and are inverses of each other on objects.”) is what is proved.
- p. 123, Definition 8.2: the definition of matrix factorization of an element f is in error; it appears not to depend on f ! The display in the definition should read

$$\psi\varphi = f \cdot 1_G \quad \text{and} \quad \varphi\psi = f \cdot 1_G.$$

Similarly the display at the bottom of the page should read

$$\psi\varphi = \varphi\psi = f \cdot I_n.$$

- p. 125, two lines after definition of direct sum of matrix factorizations, replace “to a matrix factorizations” with “to a matrix factorization”.
- p. 131, replace R with $R^\#$ in the first sentence of the proof of Corollary 8.16 so it reads “If $M^\#$ were a direct sum of three or more non-trivial $R^\#$ -modules. . .”.
- p. 131, line 9, there is an unwanted space between “(iii)” and the comma.
- p. 131, line 13, replace “the” with “them” to get “. . . none of them free by Proposition 8.15.”
- p. 131, proof of Lemma 8.17, the argument for (ii) is slightly obscure. One way to clarify is to prove (iii) first (its proof does not depend on (ii)), then observe that (iii) implies that

$$S[[z]] \otimes_S N \xrightarrow{z^{1n-\varphi}} S[[z]] \otimes_S N \longrightarrow N \longrightarrow 0$$

is a *minimal* resolution. Killing z now gives a minimal free resolution of N^b , and it follows that $\text{syz}_1^R(N^b) \cong N^b$.

- p. 133, line 12, replace N_i with N_i^b .
- p. 138, Lemma 8.32 should probably assume that M is stable in order to apply Proposition 8.18.
- p. 139, first display, the third module should be $(\text{syz}_1^R M)^\star$, not $(\text{syz}_1^R)^\star$.
- p. 139, last sentence before exercises, replace “than” with “that” to get “Knörrer’s stronger result that in fact...”.
- p. 140, Exercise 8.43 should refer to Example 8.21, not Exercise 8.21.
- p. 195, bottom, and p. 362, left column: The macro $\ell_R(-)$ for Loewy length is ugly. It should look more like $\ell_R(-)$.
- p. 204, display (12.2) has the subscripts switched; the map φ^* should go from P_0^* to P_1^* .
- p. 223, Theorem 13.8 should assume that R is Gorenstein on the punctured spectrum in order to apply Proposition 13.4.
- p. 234, line -9, the reference to Chapter 6 should be to Chapter 9.
- p. 271, Definition 15.7: We should be honest about the fact that a very similar notion is called “*efficient* system of parameters” and that the concept we define is not completely standard.
- p. 279, line 1: The inequality “ $\ell(M/\mathfrak{x}^2M) \leq t^{\dim R} B$ ” does not follow from Theorem A.21 as claimed, since the inequality goes the wrong way. Instead we should refer to, for example, Exercise 4.6.14 of Bruns & Herzog, or combine the last sentence of Theorem A.23 with a quick inductive argument about the relationship between $e(I, M)$ and $e(J, M)$.
- p. 280, line 1 of §15.4: replace “complete local” with “complete CM local”. In line 4, replace “infinite CM type” with “unbounded CM type”. In line 8, replace “hypersurface singularities” with “hypersurface isolated singularities”.
- p. 280, line -1: replace “for all $n > d - \text{depth } M$ ” with what is actually proved, namely “for all $n \geq d - \text{depth } M$ ”.
- p. 281, Lemma 15.25: X and Y should be assumed to be indecomposable in the statement as they are in the proof.
- p. 297, Theorem 17.2: replace “ $S[z]$ ” with “ $S[[z]]$ ”. (Technically, it does not matter, in view of Exercise 8.41, but we should be consistent.)
- p. 299, line 4 of Theorem 17.5: there is a missing subscript ‘0’.

- p. 306, after proof of Theorem 17.10: we should observe here that, together with Theorem 4.10, this proves the Second Brauer-Thrall Conjecture for one-dimensional local rings that are either analytically unramified or CM and equicharacteristic.
- p. 314, Definition A.18, the equations defining what it means for I to be a reduction of J are both backwards. They should be $J^{n+1} = IJ^n$ and $J^{n+k} = I^k J^n$.
- p. 319, the numbering of the last three conditions (v), (vi), and (vii) is off by one, so that (v) overlaps with (v) on page 317. They should be labeled (vi), (vii), and (viii).

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