

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

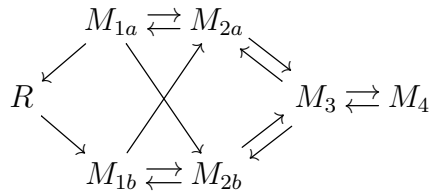
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These are errata for our book, *Cohen-Macaulay Representations*, published by AMS in May 2012. Readers are cordially invited to alert us to other goofs, omissions, or falsehoods not listed below.

- p. xvii, line 5, replace “Sean” with “Shawn”. (Sorry, Shawn!)
- p. 5, the proof of Proposition 1.4 should point out that even though Λ might not be commutative, the elements u and $v = 1 - u$ commute. Otherwise the proof would have significant problems. It should also point out that $x + I = u^n + I = e$, since $uv + I = e(1 - e) + I = I$.
- p. 6, the proof of Corollary 1.9 has significant problems, arising from the fact that x_s and x_t need not commute. We don't have a corrected argument at this time.
- 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. 20, three lines before Theorem 2.10, replace “as a vector space over $R_{\mathfrak{p}_i}$ ” with “as a vector space over $\widehat{R}_{\mathfrak{p}_i}$ ”.
- p. 64, line -10, replace “ $S\#G$ -modules” with “ $S\#G$ -module”.
- 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. 75, example at the bottom of the page (“ $r = 5$ and $q = 3$ ”), the ring R is missing a monomial. It should be $R = k[[u^5, u^3v^4, u^2v, uv^3, v^5]]$.
- p. 87, line -2, in the sentence “If n is even. . .”, replace c by c^2 .

- p. 134, line -10, replace “replacing α by $c^{-1}\alpha$ ” by “replacing (α, β) by $(c^{-1/2}\alpha, c^{-1/2}\beta)$ ”.
- p. 135, middle, the definitions of N^+ and N^- should say “ $x \in N$ ”, not “ $x \in M$ ”. The next line should say “as S -modules” rather than “as $R^\#$ -modules”.
- 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...”. Also, Knörrer’s result only holds in the case of finite CM type.
- 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. 220, third paragraph of the proof of Proposition 13.4, replace “ $\varphi^*: P_1^* \rightarrow P_0^*$ ” by “ $\varphi^*: P_0^* \rightarrow P_1^*$ ”.
- p. 222, line 7, replace “for every $i, j \geq 0$,” by “for every $i, j \geq 0$.”
- p. 222, third display, replace the second i by $i + d$, so instead of “ $\text{Ext}_R^i(X, \text{Hom}_R(Y, I^d)) \cong \text{Ext}_R^i(X, \text{Hom}_R(Y, \omega))$ ” it reads “ $\text{Ext}_R^i(X, \text{Hom}_R(Y, I^d)) \cong \text{Ext}_R^{i+d}(X, \text{Hom}_R(Y, \omega))$ ”
- 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. 236, first display, the (E_6) quiver is wrong. It should be



- 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. 310, the statement of the Depth Lemma (Lemma A.4) is faulty. Replace assertion (ii) by “depth $U \geq \min \{ \text{depth } V, \text{depth } W - 1 \}$ ”.
- 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. 316, line 3 should end “ $e_R(I, M) = \dim_K(K \otimes_R M) \cdot e_R(I, R)$ ”.
- 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).
- p. 323, line 2, replace “two A -module structures” by “two B -module structures”.
- p. 364, right column, the entries for “pure homomorphism” and “pure submodule” should both point to page 240, rather than 239.

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