

Purity, Spectra and Localisation: typos, corrections and comments

Thanks to all those who have alerted me to these.

page xxiv, line -13: Replace $a \in M$ by $a \in X$.

page 23, statement of 1.2.11: Insert " $\bar{a} \in \phi(M)$ and" after "suppose just that".

page 52, line -8: " πM " should be " M "

page 74, line 3 of statement of Proposition 2.4.10 should read "form $s \mid \sum_i x_i r_i$ ". In line 2 of the proof, replace the 2×1 matrix by the 1×1 matrix (r) , modify the expression on line 3 as above and delete the parenthetical statement (which is, when one actually thinks about it, clearly nonsense!). All uses of this result in the book seem to involve just the 1-variable case, which is unaffected by this correction.

page 217, footnote: I misremembered a conversation here, conflating two results that have Goursat's name attached. See J. Lambek, Goursat's Theorem and homological algebra, *Canad. Math. Bull.*, 7 (1964), 597-608.

pages 238/9, proof of 5.3.15: The relative case (X a proper closed subset) requires a little more argument than indicated. The further details can be found as Lemma 5.1 (which proves the same result in the triangulated category setting) in K. K. Arnesen, R. Laking, D. Pauksztello and M. Prest, The Ziegler spectrum for derived-discrete algebras, arXiv:1603.00775.

page 272, Corollary 5.4.13: This should read "If N is isolated and..."

page 276, first paragraph of Section 5.5.2: The condition that ${}_S B$ be projective already should appear on line 5 of that paragraph.

page 289, line 5: the " R " in " $sI \leq R$ " should be replaced by the image of R in R_τ

page 291, after 6.1.20: A very short and direct route to Corollary 6.1.20 is to use the observation that the graph of any biendomorphism is an $\text{End}(M)$ -submodule of M^2 and hence is defined by a pp condition.

page 322, line 17: This ring is wild but not strictly wild.

pages 402-405, line 1: This assigns rank ∞ to any zero morphism, which is not necessarily what we want, so leave the rank of any zero morphism undefined and/or modify statements appropriately. For example, on p.405, lines 11/12 add "or $f = 0$ ".

page 413, line 1: Replace $x + x = 0$ by $x + 0 = 0$.

page 430, statement of 10.2.21: one of the mod- R s should be R -mod

page 438, line -1: Replace "pure (hence split)." by "split."

page 439, line 8: Replace one of the "mod- R "s by " R -mod".

page 441, line -13: Delete " G ".

page 495, 12.1.2, diagram: Each vertical line of the parallel pair should have an arrow (at the bottom).

page 496, lines -7/-6: Put "a linear combination of elements" in parentheses.

page 498, line 4: Replace "by the first part by "by 12.1.3".

page 542, statement of 13.2.9: This should say that Gabriel dimension is bounded above by Krull-Gabriel dimension (the argument is indicated in the paragraph before the statement).

page 586, statement of 15.1.4, line 3: Replace “up to isomorphism” by “up to scalar multiplication”.

page 606, line 6 of statement of 16.1.4 and paragraph immediately following statement of that result: \mathcal{C} should be assumed to be abelian, so the statement in the result becomes “If \mathcal{C} is abelian then \mathcal{C} is locally coherent iff $\mathcal{A} = \mathcal{C}^{\text{fp}}$ is abelian” and the second sentence after the statement of 16.1.4 should be replaced and lead into the third sentence as follows “It follows that if such a category is abelian then, by 16.1.5, it has products and therefore, by 16.1.11, it is actually Grothendieck and it is equivalent to say that an abelian category is locally coherent ...”.

In view of this, the term “locally coherent” should, throughout the book, be understood as including the assumption of abelian (if this is not implicit from the context), for instance on page 672, in the statement of 18.1.6.

page 610, a reference for a proof of 16.1.15 is [516, 5.2]; the original proof there contained an error (pointed out by Michel Hébert) but is now repaired using an argument from J. Adámek and J. Rosický, On pure quotients and pure subobjects, Czech. Math. J., 54(129) (2004), 623-636 - which is a useful reference for this topic.

page 612, line -7: Replace “image of M ” by “image of some direct sum of copies of M ”.

page 641, Remark 17.2.14, line 3: should read, “has, just from the definitions, the property that $(-, C) = 0$ implies $C = 0$.”

page 642, 17.2.16: This is misstated; see the original reference for the correct statements.

page 678, line 9: Replace “18.1.5” by “18.1.4”.

page 690, line 4: should read “ $\{A \in \text{Mod-}R : \dots$ ”

page 712, definition of locally coherent: see correction above re page 606 - in particular the term “locally coherent” will be used just for abelian categories.

page 757, entry for “Krull-Gabriel”: Add, “602”.

page 762, entry for “Krull-Gabriel dimension”: Replace “602” by “see dimension, Krull-Gabriel”.