Jacques MARTINET Last update: June 19th, 2023.

Erratum to *Perfect Lattices in Euclidean Spaces*

Note. The English edition of my book takes into account the (numerous) errors detected early enough in the French edition. Some of the errors listed below are reproduced from the French edition. They are marked "**F E**", and are quoted in the French erratum. Amazingly, I introduced some errors while making the translation into English (for instance on page 338, because I had to make use of a new package). These are marked "**E**".

Since May 2015, the erratum for the French edition is no longer maintained.

page 41 (**F E**; Gabriele NEBE). In Th. 2.2.8, *replace* $\left(\frac{4}{3}\right)^{(n-1)/2}$ by $\left(\frac{4}{3}\right)^{n(n-1)/2}$.

page 48, last line: *replace* $\Lambda' = \lambda u_\lambda(\Lambda)$ by $\Lambda' = \lambda u(\Lambda)$

page 59, line 4 (**F E**; Bertrand MEYER):
$\det(M) = \gamma'_{n,n-k}(\Lambda)^2\, d_{n-k}(\Lambda^*)^{-1} = \gamma'_{n,n-k}(\Lambda)^2\, \det(\Lambda)\, d_k(\Lambda)^{-1}$
instead of
$\det(M) = \gamma'_{n,n-k}(\Lambda)^2\, d_{n-k}(\Lambda^*) = \gamma'_{n,n-k}(\Lambda)^2\, \det(\Lambda)\, d_k(\Lambda)^{-1}$

page 59, line 21 (**F E**; Bertrand MEYER): $(p(\Lambda) = \Lambda^* \cap F^\perp)^*$ $p(\Lambda) = \Lambda^* \cap F^\perp$

page 63, line -8: *replace* does use by does not use

page 64, line 12: *replace* 1991 by 1891

page 65, line -11: *replace* there by their

page 77, l. 11 (**E**; Robin Chapman) — "lost in translation!":
read: of V by V/W where W is the intersection ...

page 80, (**E**; after Robin Chapman): l. 4 to 6, *suppress* The derivative ...

page 100. l. 16(**E**) *replace* $n \geq 8$ by $n \geq 6$

page 141. (**E**) Exer. 4.4.7, line 1: "psl odd" is a slip for *odd* (slanted)

page 160. (**F E**) line 2: *replace* $\varphi(n)$ by $\varphi(n+1)$

page 169. (**E**) ([Oe] → ([Oe])

page 182. (**E**) In the fourth column of the table, *exchange* 2048 and 2300.

pages 190–194 (**F E**). Robin Chapman (www.maths.ex.ac.uk/~rjc/rjc.html) pointed out an imperfection at the end of the long induction process used to prove Korkine and Zolotareff's Theorem 6.1.2.

page 197, l. 7 (**E**): $s + s^* \geq \frac{n(n+1)}{2} + 1$ instead of $s + s^* \geq n + 1$.

page 202 (**E**), displayed formula in Theorem 6.4.6. The summation is

$$\sum_{i=1}^{n} \qquad \text{instead of} \qquad \sum_{i-1}^{n} .$$

page 203, l. 7–8 (**E**): $\gamma_5^{5/2} < 3$ instead of < 2.

page 213, l. P_7^7, col. 5 (**E**): $180 \cdot 3$ instead of 1803 .

page 215, l. P_7^{27}, col. 6 (**F E**): P_6^6 instead of P_6^4 .

page 227, l. 8: when instead of where

page 229 (**F E**; remark of Gael COLLINET). In Proposition 7.1.4, it is true that the Voronoi cone is the convex hull of the half-lines containing the projections, but the assertion on the projection cone in not correct in dimensions $n \geq 3$.

page 236, l.14: (**F E**; G. N.). *Read:* $A + XB = A\,(I_n + XA^{-1}B)$
(in the book, X is missing).

page 242, l.-1: (**E**) *Read:* $1 \leq i < j \leq n$.

page 259, Exercise 7.6.1, 1. (**E**) *suppress* cyclic
page 299 (**F E**). Suppress Theorem 8.7.2 and its proof; and subsequently,
page 304 (**F E**). Suppress "One could construct ... BW_{32})."
The "proof" of Theorem 8.7.2 actually shows the existence of $\mathfrak{O}$-module structures on the lattice $\mathbb{E}_8$ for all the listed orders $\mathfrak{O}$. However, these structures *are not* Hermitian structures, since the scalar product has nothing to do with these module structures.
I realized the error in Theorem 8.7.2 thanks to a work in progress by Stephanie Vance (now [Van1]), extending to Hermitian situations Mordell's Theorem 2.3.1. Applied with the order $\mathfrak{M}_3$, her work together with Theorem 8.7.2. would have implied that $\Lambda_8 \sim \mathbb{E}_8$ is contained in K_{12}, whereas the densest 8-dimensional sublattice of K_{12} is the less dense lattice K_8.

page 338, (**E**) fig. 9.3.3 (a): add the class a_3 and the obvious edges a_3—a_4
(**E**) fig. 9.3.3 (b): **the edges** c_6—c_7 **and** b_5—b_6 **are missing**.
[The text is correct; corrected diagrams are reproduced below.]

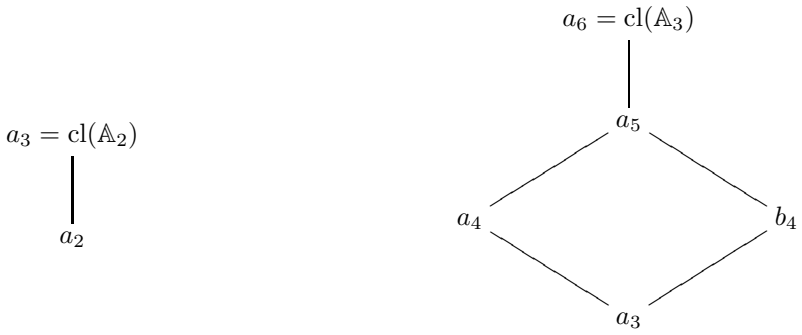

Figure 9.3.3 (a). Inclusion graphs for minimal classes in dimensions 2 and 3.

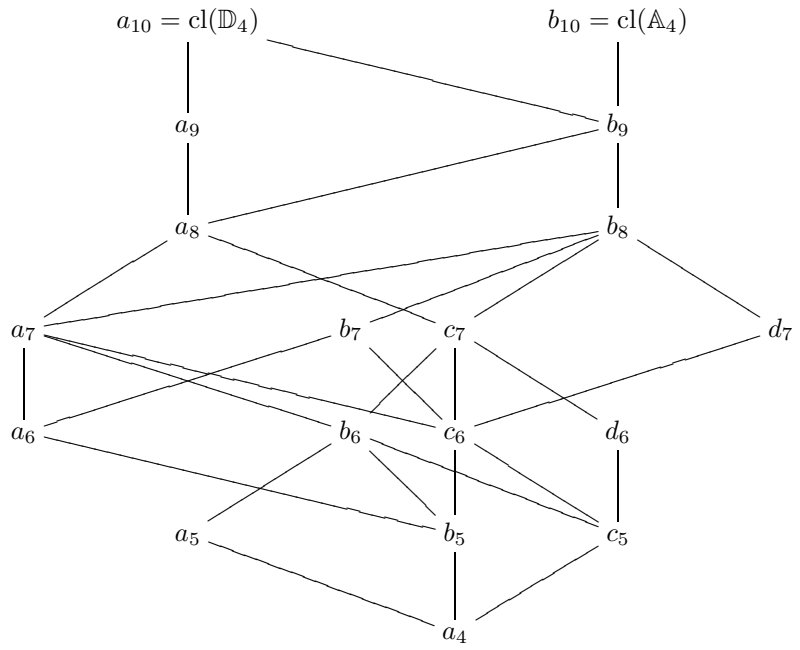

Figure 9.3.3 (b). Inclusion graphs for minimal classes in dimension 4.

page 341 (**E**), Theorem 9.4.4: ... proportional **to** an algebraic ...; also the proof works under the weaker hypothesis "**weakly eutactic**" instead of "**eutactic**".

page 358 (**F E**), Exercise 9.2.2. $\mathbb{Z}^3$ instead of $\mathbb{Z}^n$.

page 361 Exercise 9.6.2. Section 11.8 instead of Section 11.11.

page 377 (**F E**) (Justin Martel). Prop. 10.6.2: Λ instead of E.

page 400 (**F E**), l. 17. $\mathbb{A}_5^3$ instead of $\mathbb{A}_5^2$

page 454 line 12. $\mathbb{A}_4, \mathbb{A}_6^{(2)}$ instead of $\mathbb{A}_5, \mathbb{A}_7^{(2)}$

page 454 (**E**), line 13.4+4, ... according *to* the nature...

page 468 (**E**), line -6, $\mathbb{E}_5 \simeq \mathbb{D}_5$ instead of $\mathbb{E}_6 \simeq \mathbb{D}_5$.

page 473 (**F E**) page 473 (**F E**) Rogers's (or Rogers') instead of Roger's

page 493. In Theorem 16.4.1, *read:* $2 + 2\left\lfloor \frac{(\ell+1)\,n}{48} \right\rfloor$ (in the book, the term "2+" is missing).

page 494, l. 14 (G. N.). $\sum \phi(s^2)$ *instead of* $\sum \phi(s)$

References, list of symbols, index

The exact title of the "Monographie 37 de l'Enseignement Mathématique" is "Réseaux euclidiens, designs sphériques *et formes modulaires*" (not "*et groupes*", which was a former provisional title). This error occurs on pages 497 (ref. [Bc-V2] and [Bac-V]), 501 (ref. [Cou6]), 504 (ref. [Mar6], [Mar7], [Mar-V]), and 508 (ref. [Ven3]).

page 497. The title of [B-M6] is *Symmetric groups and lattices* (Monatshefte Math. **140** (2003), 179–195).

page 498. In "C. Batut. See also ...": [Mar6] instead of [Mar5].

page 515, l. 6: Well-rounded instead of Well-ounded.