LIST OF CORRECTIONS FOR "THE ALGEBRAIC AND GEOMETRIC THEORY OF QUADRATIC FORMS" BY ELMAN–KARPENKO–MERKURJEV

(TO BE UPDATED)

- **line -2 before Lemma 1.4**:
  "alternative bilinear forms" $\longmapsto$ "alternating bilinear forms"
- **Example 5.5**:
  "$\{a,-a\}=1$" $\longmapsto$ "$\{a,-a\}=0$"
- **(6.12)**:
  "$\mathfrak{c}\approx$" $\longmapsto$ "$\mathfrak{b}\approx$'
- **Definition 7.1**:
  "*of* of" $\longmapsto$ "of"
- **line -5 before Example 7.8**:
  "the quadratic form" $\longmapsto$ "a quadratic form"
- **Condition (4) right before Proposition 7.19** should be removed.
  (noticed by Erhard Neher).
  (Notation for the group scheme $\mathrm{SO}(\varphi)$ adopted in the book is different, c.f. Page 355. For nondegenerate φ, the definition of $\mathrm{SO}(\varphi)$ given in (4) is incorrect. In characteristic 2 it is closed to the correct one if $\dim\varphi$ is odd: the radical of φ needs to be replaced by the radical of b_φ.)
- **Proof of Theorem 17.13**:
  line -2: "Lemma 7.13" $\longmapsto$ "Proposition 7.13"
- **§7.B, line 3**:
  "isotopic" $\longmapsto$ "isotropic"
- **line -3 before Proposition 7.29**:
  "anisotopic" $\longmapsto$ "anisotropic"
- **§8.B, line 2**:
  "isotopic" $\longmapsto$ "isotropic"

Date: 11 Jan 2024.

- **Proof of Corollary 23.4**:
  "By Theorem 22.4," $\longmapsto$ "By Proposition 22.4,"

- **Proof of Proposition 53.3**, 1st line:
  "to proof" $\longmapsto$ "to prove"

- **Proposition 56.11**:
  "a morphism" $\longmapsto$ "a proper morphism"

- **Page 277, lines 3–4 after 2nd displayed formula**:
  The words
  ", so it can be viewed as a contravariant functor from the category of smooth schemes to the category of abelian groups"
  need to be removed.

- **Theorem 61.14** should be replaced by
  Theorem 61.14. Let X and Y be two smooth schemes. Then
  $$\mathrm{Sq}_{X\times Y}(\alpha\times\beta)=\mathrm{Sq}_X(\alpha)\times\mathrm{Sq}_Y(\beta)$$
  for any $\alpha\in\mathrm{Ch}(X)$ and $\beta\in\mathrm{Ch}(Y)$.
  (The proof of Theorem 61.14 should be modified accordingly.)

- **1st paragraph of §72**:
  The paragraph should be replaced by its first two sentences.
  (The rest of the 1st paragraph should be removed.)

- **Proof of Corollary 78.2**:
  "Hence by" $\longmapsto$ "By"

- **Remark 80.5**:
  "$\deg_X$" $\longmapsto$ "$\frac{1}{2}\deg_X$"; "$\deg_Y$" $\longmapsto$ "$\frac{1}{2}\deg_Y$"

- **Page 358, 2nd displayed formula**:
  If $\dim\varphi=2n+2$ with odd n and $k=0$, then $e_k=e_0$ needs to be replaced by e_0' (cf. Exercise 68.3). As a consequence, in the same situation, $e_k=e_0$ four lines lower as well as $e_k=e_0$ in (86.5) needs to be replaced by e_0'.

- **Proof of Proposition 87.1, line -9**:
  "$\mathrm{CH}(\mathbb{P}(E'))$" $\longmapsto$ "$\mathbb{P}(E')$"

- **2nd line of §89**:
  "Let φ be a nondegenerate quadratic form" $\longmapsto$
  "Let φ be a split nondegenerate quadratic form"

- **Theorem 89.1**:
  "with φ be a nondegenerate quadratic form" $\longmapsto$
  "with φ be a split nondegenerate quadratic form"

- **Proof of Theorem 90.3**:
  (noticed by Raphaël Fino)

  Line 9: "of odd degree" $\longmapsto$ "of odd degree dividing".

  To get the inequality of Line 3 after commutative square on Page 369, it is not enough to know that i_* is nontrivial: one needs to know that the composition of i_* followed by $\mathrm{Ch}(\mathrm{Gr}) \to \overline{\mathrm{Ch}}(\mathrm{Gr})$ is nontrivial. However, when proving that i_* is nontrivial, we actually proved that the composition is nontrivial.

- **2nd paragraph of §92**:
  It should be required that the variety X and the scheme X' are defined over the same extension field of F.

- **Remark 92.3** should be replaced by

  Remark 92.3. As shown in [**25**], the class of all projective homogeneous varieties (under actions of semisimple affine algebraic groups) is included in a tractable class constructed as follows. For a field extension F'/F, the F'-schemes of the class are finite disjoint unions of F'-varieties each of which can be obtained by the following procedure. We take a finite separable field extension L/F', a semisimple affine algebraic group G over L, a projective G-homogeneous L-variety X and consider X as an F'-scheme via the composition $X \to \operatorname{Spec} L \to \operatorname{Spec} F'$.

- **Exercise 92.6**:
  "$\operatorname{End} X \to \operatorname{End} X_E$" $\longmapsto$ "$\operatorname{End} M(X) \to \operatorname{End} M(X_E)$"

- **Proof of Corollary 92.7, last paragraph**:
  (noticed by Charles de Clercq and Offer Gabber)

  f^t is a morphism $(Y, q^t) \to (X, p^t)$, not $(Y, q) \to (X, p)$. The proof does not work. The statement of Corollary 92.7 should be modified by adding the requirement of existence of a morphism $g\colon (Y, q) \to (X, p)$ such that g_E is an isomorphism.

- **Page 434 (Index)**:
  "anisotopic" $\longmapsto$ "anisotropic"