List of Misprints and additions

1. Mar 23 2004 (From Rita Pardini)

   - On page 300 (bottom) the reference [Pa] is wrong and *should be replaced* by :

     R. Pardini, The classification of double planes of general type with $p_g = 0$ and $K^2 = 8$, J. of Algebra 259 (2003), 95–118 [`arXiv:mathAG0107100`]

     This reference does not exist in the list of references.

2. Mar 23 2004 (From Chris Peters)

   - In the Preface to the Second Edition: line 17 ether *should read* "either"
   - On page 248: line -9 "in the real sense, i.e. in $\mathrm{NS}(X) \otimes \mathbb{Q}$" *should read* "in the real sense, i.e. in $\mathrm{NS}(X) \otimes \mathbb{R}$"
   - line -4 "this meas *should read* "this means"
   - "in th e light" *should read* "in the light"

3. April 14 2004 (From Jonghae Keum) Here one finds a list of folklore surfaces of general type with $p_g = 0$ compiled by Jonghae Keum

4. Feb 13 2008 (From Victor Kulikov) The Burniat surface with $p_g = q = 0$, $c_1^2 = 2$ has torsion $(\mathbf{Z}/2\mathbf{Z})^{\oplus 3}$ instead of $(\mathbf{Z}/2\mathbf{Z})^{\oplus 2}$. There is an oversight in the reference [Pet2]; there are 4 additional 2-torsion elements coming from the 3 lines going to one of the four points A. This affects the table. See also Vic. S. Kulikov: Old and new examples of surfaces of general type with $p_g = 0$. See also `arXiv:mathAG0404134`

5. Mar 2 2010 (From Klaus Hulek):

   p. 143, above Theorem 2.12: it *should read*

   $H^{1,1}_{\mathbb{R}}(X) = H^{1,1}(X) \cap H^2(X, \mathbb{R})$ instead of $\cap H^1(X, \mathbb{R})$).

6. May 30 2012 and Feb 13 2013 From (David Ploog)

   - p. 131, (18.1) Theorem *should read* (18.1) Lemma.
   - p. 41, l5: "and hence and defines" *should read* "and hence defines"
   - p. 199, line -13 on bi-elliptic surfaces: The sequence (4) then shows $h^1(\mathcal{O}_X) = 0$. *should read* The sequence (4) then shows $h^1(\mathcal{O}_X) = 1$.

- In the index: "Bi-elliptic surface" gives two pages, 199 and 241. *should read* pages 199, 244–245.

7. Jun 13 2013 (From Paolo Oliveirio)

- p. 33 line 7: y *should read* Y
- p. 56 line 6: $B' = B \times_Y X$ *should read* $B' = B \times_X Y$
- p. 86 line -4: E of D *should read* R of D
- p. 91: in Proposition 2.3, after (K_X, D) need a point
- p. 111 line 14 and below: add a unit to (8), (9), (10)
- p. 107 line 13: $\sigma^\star$ *should read* $\sigma_1^\star$
- p. 117 line 4: is *should read* if
- p. 134 line 14: 6 *should read* 16
- p. 137 line 19: $P_m(X) \geq 2$ *should read* $P_m(X) \geq 1$
- p. 143 line 9: $\sigma + d(\tau + \bar{\tau})$ *should read* $\sigma + d\left(\frac{\tau+\bar{\tau}}{2}\right)$
- p. 154 line 7: $E \cap E_0$ *should read* $E \cap X_0$
- p. 162 line 18: For the dual cone: $v \in V$ *should read* for $v \in C$
- p. 187 line 7: $b_2(X) = 0$ *should read* $b_1(X) = 0$
- p. 191 line 4: $\mathbb{P}_n$ *should read* $\mathbb{P}_N$
- p. 191 line 5 :$f_\star \mathcal{L} \otimes \mathcal{O}_X(-F)$ *should read* $f_\star(\mathcal{L} \otimes \mathcal{O}_X(-F))$
- p. 213 line 7: $\mathcal{K}_s$ *should read* $\mathcal{K}_S$
- p. 214 line -4 :$\chi(\mathcal{O}_X) = 2$ *should read* $\chi(\mathcal{O}_X) = 0$
- p. 214 line -4 and below :

$$\begin{aligned}
\chi(\mathcal{O}_X) &= 1, \quad k = 2,\ m_1 = m_2 = 2 \\
\chi(\mathcal{O}_X) &= 2, \quad k = 4,\ m_1 = m_2 = m_3 = m_4 = 4 \\
\chi(\mathcal{O}_X) &= 2, \quad k = 3,\ m_1 = m_2 = m_3 = 3 \\
& \qquad\quad m_1 = 2,\ m_2 = m_3 = 4 \\
& \qquad\quad m_1 = 2,\ m_2 = 3, m_3 = 6.
\end{aligned}$$

should read

$$\begin{aligned}
\chi(\mathcal{O}_X) &= 1, \quad k = 2,\ m_1 = m_2 = 2 \\
\chi(\mathcal{O}_X) &= 0, \quad k = 4,\ m_1 = m_2 = m_3 = m_4 = 2 \\
\chi(\mathcal{O}_X) &= 0, \quad k = 3,\ m_1 = m_2 = m_3 = 3 \\
& \qquad\quad m_1 = 2,\ m_2 = m_3 = 4 \\
& \qquad\quad m_1 = 2,\ m_2 = 3, m_3 = 6.
\end{aligned}$$

- p. 220 line -5: Sect. 7 *should read* Sect. 6
- p. 223 line -2: Sect. 11 *should read* Sect. 10
- p. 223 line -11: $H^i(\mathcal{K}^n_X) = H^i(p_\star \mathcal{K}^n_X)$ *should read* $H^i(\mathcal{K}^n_Y) = H^i(p_\star \mathcal{K}^n_X)$
- p. 289 line 24: the reference [ChenV.] does not exist in the bibliography. Meant is

  [Chen, M. and E. Viehweg: Bicanonical and adjoint linear systems on surfaces of general type. Pacific J. Math. **219** (2005), no. 1, 83–95]
- p. 291 line 3: c_2 increases *should read* c_2 decreases
- p. 244 line -14: 6)K 3-surfaces *should read* 7)K 3-surfaces
- p. 280 line -15: $Proj(R^{(n)}(X))$ *should read* $Proj(R^{[n]}(X))$
- p. 287 line -21: degree 6 *should read* degree 8
- p. 287 line 12: $R(X)^3 \neq R(X)$ and $R(X)^4 \neq R(X)$ *should read* $R^{[3]}(X) \neq R(X)$ and $R^{[4]}(X) \neq R(X)$
- p. 412 In reference [Ko63] Ann. Math. *should read* Am. J. Math.

8. July 2016 (From Thomas Peternell)
   p. 279, line 11. $\frac{2}{9}$ instead of $\frac{1}{9}$.

9. May 2017 (From Klaus Hulek)
   p. 360 just after Corollary (22.4) the definition of an M-polarization ϕ is not correct: not all, but just some divisor in $\phi^{-1}(C_M^{\mathrm{pol}})$ should be ample; indeed, if (X, ϕ) is M-polarized, the ample cone $C(X) \subset H^2(X, \mathbb{R})$ intersects $\phi^{-1}M_{\mathbb{R}}$ in a non-empty subcone of $\phi^{-1}(C_{M_{\mathbb{R}}^{\mathrm{pol}}})$, i.e., $\emptyset \neq C(X) \cap \phi^{-1}(M_{\mathbb{R}}) \subset \phi^{-1}(C^{\mathrm{pol}}_{M_{\mathbb{R}}})$ and the inclusion might be strict.

10. May 2017 (From Chris Peters)
    p. 308, line -9/8 "we define the Kähler surface X" should be omitted.

11. April 2019 (Answering a question of Lingxu Meng)
    On p. 43 , line 15/16. "which by definition maps to": is incorrect.

    To explain this, let $A^{p,q}$ stand for the global (p,q)-forms and A^n for the n-forms. A Dolbeault class of type (p,q) is represented by $\alpha \in A^{p,q}$ with $\bar\partial\alpha = 0$. However $\partial\alpha \in F^{p+1}A^{p+q}$ need not be zero, and so there is not a priori a well-defined map to A^n. It only becomes well defined in the graded complex $\mathrm{Gr}^p_F A^{p+\bullet}$ which is the E_1-term of the spectral complex. Its cohomology is therefore the Dolbeault cohomology. The

$E_\infty^{p,q}$-term is $\mathrm{Gr}_F^p H^{p+q}$ and degeneracy at E_1 implies that the latter is isomorphic to the Dolbeault group $H^{p,q}$.

This can also be shown as a consequence of the $\partial\bar{\partial}$-lemma. To see this one has to adapt also the (incomplete) statement of Corollary 13.7 on p. 45. Indeed, by Lemma 13.6, if α is a $\bar{\partial}$-closed form of type (p,q) and $\partial\alpha = \beta$, one may write $\beta = \partial\bar{\partial}\gamma$ and hence $\tilde{\alpha} = \alpha - \bar{\partial}\gamma$ – which represents the same class as α – is now d-closed. This shows that the assignment

$$\text{Dolbeault class of } \alpha \mapsto \text{ De Rham class of } \tilde{\alpha} \in F^p H^{p+q}$$

gives a homorphism from $H^{p,q}$ to ${}'H^{p,q}$ which is clearly surjective and, again by the $\partial\bar{\partial}$-lemma, also injective. Since ${}'H^{p,q} \simeq \mathrm{Gr}_F^p H^{p+q}$ this also gives an isomorphism $H^{p,q} \simeq \mathrm{Gr}_F^p H^{p+q}$.