

Using Algebraic Geometry, second edition

June 25, 2006

Errata:

Page 28, line 4: Replace “last” with “first”

Page 75, line –3: Replace “ $-\text{rem}(p_{i-1}(t), p_{i-2}(t), t)$ ” with “ $-\text{rem}(p_{i-2}(t), p_{i-1}(t), t)$ ”

Page 75, line –2: Replace “division of p_{i-1} by p_{i-2} ” with “division of p_{i-2} by p_{i-1} ”

Page 123, line 11: Replace “ $A = \mathbb{C}(u)[x_1, \dots, x_n]/\langle u - x_n, f_1, \dots, f_n \rangle$ ” with “ $A = \mathbb{C}(u)[x_1, \dots, x_n]/\langle u - x_n, f_1, \dots, f_{n-1} \rangle$ ”

Page 123, line 19: Replace “ $\widehat{A} = \mathbb{C}(u_0)[x_1, \dots, x_{n-1}]/\langle \widehat{f}_1, \dots, \widehat{f}_n \rangle$ ” with “ $\widehat{A} = \mathbb{C}(u_0)[x_1, \dots, x_{n-1}]/\langle \widehat{f}_1, \dots, \widehat{f}_{n-1} \rangle$ ”

Page 149, line –18: Replace “note that that” with “note that the”

Page 161, line –3: Replace “ $S = \{1 + g : \text{LT}(g) < 1\}$ ” with “ $S = \{1 + g : g = 0 \text{ or } \text{LT}(g) < 1\}$ ”

Page 166, lines –20 and –18: Replace “ $t^a > t^{a'}x^{\beta}$ ” with “ $t^a > t^{a'}x^{\beta}$ ” (twice)

Page 197, line –10: Besides the 1994 paper [PW] by Park and Woodburn, we should also mention two other papers that deal with algorithmic aspects of the Quillen-Suslin result:

L. Caniglia, G. Cortiñas, S. Danón, J. Heintz, T. Krick and P. Solernó (working group N. Fitchas), *Algorithmic aspects of Suslin’s proof of Serre’s conjecture*, Comput. Complexity **3** (1993), 31–55

N. Fitchas and A. Galligo, *Nullstellensatz effectif et conjecture de Serre (théorème de Quillen-Suslin) pour le calcul formel*, Math. Nachr. **149** (1990), 231–253.

Page 203, line 2 of part a of Exercise 23: Replace “ $\{af : a \in I, f \in M\}$ ” with “ $\{\sum_{i=1}^{\ell} a_i f_i : a_i \in I, f_i \in M \text{ for } i = 1, \dots, \ell\}$ ”.

Page 203, line –16: Replace “We let $R = k[x, y]$ ” with “Let $R = k[x, y]$, where k is a field of characteristic different from 2,”

Page 203, lines –9 to –1: Delete and replace with the following:

- a. Verify that $\mathbf{f} = (f_1, f_2, f_3)^T = (1, -x/2, -1/2)^T \in R^3$ satisfies $(1+x)f_1 + (1-y)f_2 + (x+xy)f_3 = 1$.
- b. Let I be the 3×3 identity matrix. Verify that the columns $\mathbf{g}_1, \mathbf{g}_2, \mathbf{g}_3$ of the matrix $I - \mathbf{f} \cdot A$ span $\ker A$. Hint: If $A\tilde{\mathbf{f}} = 0$, then $\tilde{\mathbf{f}} = (I - \mathbf{f} \cdot A)\tilde{\mathbf{f}}$ is a linear combination of the columns of $I - \mathbf{f} \cdot A$.
- c. Show that $\{\mathbf{g}_1, \mathbf{g}_2\}$ is a basis of $\ker A$. (Unfortunately, the result of part c is special to the choice of \mathbf{f} made in part a. If \mathbf{f} is an arbitrary solution of $A\mathbf{f} = 1$, then the first two columns of $I - \mathbf{f} \cdot A$ need not give a basis of the kernel.)

Page 210, lines -9 and -8 : Replace “(see Exercise 5 below)” with “(see Exercise 11 of §3)”

Page 224, line 12: Replace “Exercise 1” with “Exercise 2”

Page 227, line -2 : Replace “ $(AG \ I_t - AB)$ ” with “ $(AD \ I_t - AB)$ ”.

Page 231, line 2: Replace “ R^{n+t+s} ” with “ R^{m+t+s} ”

Page 239, line 1: Replace “matrix of $M/\mathfrak{m}M$.” with “matrix of $M/\mathfrak{m}M?$ ”

Page 240, line 4: Replace “have have” with “have”

Page 263, line 1: Replace “from (1.8)” with “from (1.7)”

Page 263, line 6: Replace “see (1.16)” with “(see (1.14))”

Page 327, line 9: In the statement of Theorem (3.13), replace “ $\mathcal{A} = \{m_1, \dots, m_l\} \subset \mathbb{Z}_{\geq 0}^n$ ” with “ $\mathcal{A} = \{m_1, \dots, m_l\} \subset \mathbb{Z}^n$ ”