

Curves of Genus 2 with Elliptic Differentials and the Height Conjecture for Elliptic Curves

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Errata et Addenda

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- p. 30, line 10-: Replace “on” by “an”.
- p. 31, line 4: Replace “ A_2 ” by “ \mathcal{A}_2 ”.
- p. 31, line 11: Replace “ J_E ” by “ $J_{E'}$ ”.
- p. 31, line 12: Replace “ $f^*|E[N]$ ” by “ $f^*_{|E[N]}$ ”.
- p. 31, line 13: Replace “ist” by “is” .
- p. 31, line 10-: The action is actually a “twisted diagonal action.” This means that $g \in \Gamma_N$ acts as follows: $g(x, y) = (g(x), g^*(y))$, where $g^* = wgw^{-1}$ and $w = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$.
- p. 31, line 5-: Replace “equiarant” by “equivariant”.
- p. 32, line 8-: Replace “2” by “ $2N^3$ ”.
- p. 33, line 12: The formula should read as follows:

$$\partial M_2^{ell}(N) = \pi\left(\bigcup_{1 \leq k < N} \text{Graph}(\langle k \rangle \circ \tilde{T}_{k(N-k)})\right).$$

Here $\langle k \rangle \in \text{Aut}(X(N))$ denotes the automorphism induced by $A_k \in \text{Sl}_2(\mathbb{Z})$ where $A_k \equiv \text{diagonal}(k^{-1}, k) \pmod{N}$, and

$$\tilde{T}_m = \sum_{\substack{d^2|m \\ (d,N)=1}} \langle d \rangle \circ T_{m/d^2}$$

where T_n denotes the usual Hecke Operator defined by the double coset $\Gamma(N) \begin{pmatrix} 1 & 0 \\ 0 & n \end{pmatrix} \Gamma(N)$. Also, $\pi : X(N) \times X(N) \rightarrow B_{1,1}(N)$ denotes the projection map.

- p. 33, line 2-: The second line under the product sign is so small that it is difficult to read. It should be: “ $p \nmid k(N - k)/(k, N)^2$ ”.
- p. 36, line 6: Here the norm $|| ||$ has the same meaning as in Faltings’ paper. Thus δ_2 is $Sp_4(\mathbb{Z})$ -invariant, and hence becomes a function on the quotient space A_2 .
- p. 36, line 9: This isomorphism is to be understood as an isomorphism of polarized abelian varieties, with $E_1 \times E_2$ having the product polarization.
- p. 38, line 11-: In a recent preprint N. Elkies has shown that the ABC- Conjecture also implies the Mordell Conjecture (Faltings’ Theorem).
- p. 39, line 3: Note that the Noether formula on E_2 reads $12h(E_2) = \delta(E_2)$, so the inequality in c) could also be written as:

$$\delta_1(C) \geq -h(E_2) + c_4.$$

- p. 39, line 4: Replace “valied” by “valid”.
- p.39, line 5: There is a serious typographical error here: “ δ_1 ” should be “ δ_0 ”, where $\delta_0 = \delta - \delta_1$. Thus, equation (4) should read:

$$h(C) = \frac{1}{7}(\omega.\omega) + \frac{1}{14}(\delta - \delta_1).$$

Using the Noether formula, this equation is equivalent to:

$$(4) \quad 2h(C) = (\omega.\omega) - \delta_1.$$

- p. 39, line 9: Replace “From 3) and 4)” by “From 3c) and (4)”.
- p. 39, line 10: Replace equation (5) by:

$$(5) \quad 2h(C) \leq (\omega.\omega) + h(E_2) + c_5$$

- p .39, line 11: Insert: “and so we obtain by 3a) that

$$(6) \quad h(E_2) \leq \omega_{C/B}^2 + c_6,”$$

- p. 39, line 13-: Replace “1880” by “1380”.