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CORRECTION TO 'GAPS BETWEEN DIVISIBLE TERMS IN $a^2(a^2+1)$'

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The proof of Theorem 1.2 in [1] relied on a result of Voutier [2] to bound the solutions in the number field K of the hyperelliptic equation $Y^2 = f(X)$, where $f(X) \in K[X]$ is a polynomial of degree n. From [2], with $F(X,Y) = Y^2 - f(X)$,

$$\max(X, Y) < e^{c_1(n,\delta)V_1(\log V_1)^{6n^2\delta}}$$

for some positive constant $c_1(n,\delta)$, where $V_1 = D_K^{6n^2} H_K(F)^{30n^2}$, D_K is the discriminant of the number field K, δ is the degree of K over $\mathbb{Q}$ and $H_K(F)$ is the height of the polynomial $F(X)$ over K. For our application, $f(X) = tX^4 + s$, over the rational integers. Hence, $n = 4$, $\delta = 1$, $D_K = 1$ and $H_K(F) = \max(s,t) \le (t-1)t$, so that

$$\max(X, Y) < e^{c_1((t-1)t)^{480}(\log t(t-1))^{96}}.$$

Instead of taking $\lambda = (t-1)t$ as in [1], one should therefore use $\lambda = [(t-1)t]^{480}$. Proceeding as in [1], this leads to the following statement in place of [1, Theorem 1.2].

THEOREM 1. *Let a and b be positive integers with $3 \le a < b$. Suppose $a^2(a^2+1)$ divides $b^2(b^2+1)$. Then*

$$b \gg \frac{a(\log a)^{1/960}}{(\log\log a)^{1/10}}.$$

References

[1] T. H. Chan, 'Gaps between divisible terms in $a^2(a^2+1)$', *Bull. Aust. Math. Soc.* **101**(3) (2020), 396–400.
[2] P. Voutier, 'An upper bound for the size of integral solutions to $Y^m = f(X)$', *J. Number Theory* **53** (1995), 247–271.

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