Exposé court

59 *On a conjecture of Levesque and Waldschmidt*

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One of the first parametrised Thue equations,

$$\left|X^3 - (n-1)X^2Y - (n+2)XY^2 - Y^3\right| = 1,$$

over the integers was solved by E. Thomas in 1990. If we interpret this as a norm-form equation, we can write this as

$$\left|N_{K/\mathbb{Q}}(X - \lambda_0 Y)\right| = |(X - \lambda_0 Y)(X - \lambda_1 Y)(X - \lambda_2 Y)| = 1$$

if $\lambda_0, \lambda_1, \lambda_2$ are the roots of the defining irreducible polynomial, and K the corresponding number field.

Levesque and Waldschmidt twisted this norm-form equation by an exponential parameter s and looked, among other things, at the equation $\left|N_{K/\mathbb{Q}}\left(X - \lambda_0^s Y\right)\right| = 1$. They solved this effectively and conjectured that introducing a second exponential parameter t and looking at $\left|N_{K/\mathbb{Q}}\left(X - \lambda_0^s \lambda_1^t Y\right)\right| = 1$ does not change the effective solvability.

We want to partially confirm this, given that

$$\min(|2s - t|, |2t - s|, |s + t|) > \varepsilon \cdot \max(|s|, |t|),$$

i.e. the two exponents do not almost cancel in specific cases.