Mohamed Taoufiq Damir, Bernadette Faye, Florian Luca, and Amadou Tall

Abstract

Here, we show that if $u_0 = 0$, $u_1 = 1$, and $u_{n+2} = ru_{n+1} + su_n$ for all $n \geq 0$ is the Lucas sequence with $s \in \{\pm 1\}$, then there are only finitely many effectively computable n such that $\phi(|u_n|)$ is a power of 2, where ϕ is the Euler function. We illustrate our general result by a few specific examples. This generalizes prior results of the third author and others which dealt with the above problem for the particular Lucas sequences of the Fibonacci and Pell numbers.