On a conjecture about repdigits in $k-$generalized Fibonacci sequences

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Abstract

For an integer $k \geq 2$, we consider the $k-$generalized Fibonacci sequence $(F_n^{(k)})_n$ which starts with $0, \ldots, 0, 1$ (k terms) and each term afterwards is the sum of the k preceding terms. F. Luca [2] in 2000 and recently D. Marques [3] proved that 55 and 44 are the largest numbers with only one distinct digit (so called *repdigits*) in the sequences $(F_n^{(2)})_n$ and $(F_n^{(3)})_n$, respectively. Further, Marques conjectured that there are no repdigits having at least 2 digits in a $k-$generalized Fibonacci sequence for any $k > 3$. In this talk, we report about some arithmetic properties of $(F_n^{(k)})_n$ and confirm the conjecture raised by Marques. This is a joint work with Florian Luca.

Key words and phrases: Fibonacci numbers, lower bounds for nonzero linear forms in logarithms of algebraic numbers, continued fractions, repdigits.

References

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