



Gastvortrag

Montag, 7. Oktober 2024

Uhrzeit: 13:00 Uhr

Seminarraum II

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On a problem of Pillai involving S-units and Lucas number

Abstract:

Two nonzero a, b are said to be multiplicatively independent if the only solution in integers x, y of the Diophantine equation $a^x b^y = 1$, is $x = y = 0$, and multiplicatively dependent otherwise. Let $k \geq 2$ be a fixed integer and $(l_n^{(k)})_{n \geq 2-k}$ be the sequence of k -generalized Lucas numbers whose first k terms are $0, 0, \dots, 0, 2, 1$ and each term afterwards is the sum of the preceding k terms. In this talk, we find all pairs of k -generalized Lucas numbers that are multiplicatively dependent. The proof of the main result heavily employs: Baker's theory of non-zero lower bounds for linear forms in logarithms of algebraic numbers, Carmichael's Primitive Theorem, and reduction techniques involving the theory of continued fractions, in particular, the LLL algorithm. This is joint work with H. Batte, J. Kasozi and F. Luca (1).

1. H. Batte, M. Ddamulira, J. Kasozi and F. Luca. Multiplicative independence in the sequence of k -generalized Lucas numbers. *Indag. Math.* (2024). <https://doi.org/10.1016/j.indag.2024.09.002>

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