

# Gastvortrag

Montag, 7. Oktober 2024

Uhrzeit: 13:30 Uhr

Seminarraum II

Dr. Herbert Batte

Makerere University / Uganda

## Sums of Fibonacci numbers that are products of powers of distinct primes

### Abstract:

Let  $(L_n^{(k)})_{n \geq 1-k}$  be the sequence of  $k$ -generalized Lucas numbers for a fixed integer  $k \geq 2$ , where the first  $k$  terms are  $0, 0, \dots, 0, 2, 1$  and each subsequent term is the sum of the preceding  $k$  terms. For an integer  $m$ , let  $P(m)$  denote the largest prime factor of  $m$ , with the convention that  $P(0) = P(\pm 1) = 1$ . In this talk, I will present results on the lower bounds of the largest prime factor of  $k$ -generalized Lucas numbers. Specifically, I will show that for  $n \geq k + 1$ , we have  $P(L_n^{(k)}) > \frac{1}{86} \log \log n$ . Additionally, I will discuss the complete characterization of  $k$ -generalized Lucas numbers whose largest prime factor is at most 7. The proof techniques draw from linear forms in logarithms, properties of linear recurrence sequences, and the LLL-reduction method. This work is part of a joint collaboration with Florian Luca.

Eingeladen von Volker Ziegler