

On the Diophantine equation $F_{n_1} + F_{n_2} + F_{n_3} = p_1^{z_1} \cdots p_s^{z_s}$

By KWOK CHI CHIM (Graz) and VOLKER ZIEGLER (Salzburg)

Abstract. Let F_n denote the n -th Fibonacci number, and p_i the i -th prime number. In this paper, we consider the Diophantine equation $F_{n_1} + F_{n_2} + F_{n_3} = p_1^{z_1} \cdots p_s^{z_s}$ in non-negative integers $n_1 \geq n_2 \geq n_3 \geq 0$ and non-negative integers z_i with $1 \leq i \leq s$. In particular, we completely solve the case that $s = 12$.

KWOK CHI CHIM
INSTITUTE OF ANALYSIS AND NUMBER THEORY
GRAZ UNIVERSITY OF TECHNOLOGY
KOPERNIKUSGASSE 24/II
A-8010 GRAZ
AUSTRIA

AND
SCHOOL OF COMPUTING, ENGINEERING
AND PHYSICAL SCIENCES
UNIVERSITY OF THE WEST OF SCOTLAND
F306, HENRY WEST BUILDING, HIGH STREET
PAISLEY PA1 2BE, SCOTLAND
UNITED KINGDOM

VOLKER ZIEGLER
INSTITUTE OF MATHEMATICS
UNIVERSITY OF SALZBURG
HELLBRUNNERSTRASSE 34/I
A-5020 SALZBURG
AUSTRIA

Mathematics Subject Classification: 11D61, 11B39, 11J86, 11Y50.

Key words and phrases: Diophantine equations, linear forms in logarithms, recurrence sequences, Fibonacci sequences.