

## Markoff $m$ -Triples with $k$ -Fibonacci Components

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### Abstract-

We classify all solution triples with  $k$ -Fibonacci components to the equation  $x^2 + y^2 + z^2 = 3xyz + m$ , where  $m$  is a positive integer and  $k \geq 2$ . As a result, for  $m = 8$ , we have the Markoff triples with Pell components  $(F_2(2), F_2(2n), F_2(2n+2))$ , for  $n \geq 1$ . For all other  $m$  there exists at most one such ordered triple, except when  $k = 3$ ,  $a$  is odd,  $b$  is even and  $b \geq a + 3$ , where  $(F_3(a), F_3(b), F_3(a+b))$  and  $(F_3(a+1), F_3(b-1), F_3(a+b))$  share the same  $m$ .

**Index Terms-** Markoff triples, generalized Markoff equation,  $k$ -Fibonacci numbers, Markoff tree.

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