Jose M. Bonnin-Cadogan, Christopher P. French, and Buchan Xue,
Continued Fractions of Roots of Fibonacci-like Fractions,
Fibonacci Quart. **46/47** (2008/2009), no. 4, 298–311.

Abstract

We describe the initial terms in the continued fraction expansion of numbers of the form $\sqrt[k]{\frac{a_{n+k}}{a_n}}$. Here, (a_n) is a sequence satisfying $a_{n+1} = ba_n + a_{n-1}$ for a positive integer b, and k is a term in the sequence $F_{b,n}$ satisfying the same recurrence relation, with $F_{b,0} = 0$ and $F_{b,1} = 1$. Our results generalize previous work of the second author concerning the initial terms in the continued fraction expansion of $\sqrt[5]{\frac{F_{n+5}}{F_n}}$.