

ON CONSECUTIVE 1'S IN CONTINUED FRACTIONS EXPANSIONS OF SQUARE ROOTS OF PRIME NUMBERS

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ABSTRACT: Motivated by recent work of Skalba we study the problem of existence of sequences consisting consecutive 1's in the periodic part of the continued fractions expansions of square roots of primes. In particular, we prove that there are infinitely many prime numbers p such that the continued fraction expansion of \sqrt{p} contains three consecutive 1's in the periodic part. This result improves recent findings of Skalba. We also present effects of our computations related to the considered problem and formulate several open questions and conjectures.