

1046-11-1264

Richard K Guy* (rkg@cpsc.ucalgary.ca), Department of Mathematics & Statistics, The University of Calgary, Calgary, Alberta T2N 1N4, Canada, and **Kell Cheng** and **Renate Scheidler**. *Vertical symmetries in continued fraction periods*. Preliminary report.

The period of the continued fraction expansion of $\sqrt{A^2X^2 + 2BX + C}$, where the quadratic satisfies the Schinzel condition, $0 \neq \Delta = B^2 - A^2C$ divides $4[\gcd(A^2, B)]^2$, consists of linear functions $(\alpha_i X + \gamma_i)/\beta_i$ punctuated by strings (which may be empty) which are the c.f.e. of fractions N/ν_i . The period comes in P shapes, depending on the value of $X \bmod P$, where P , N , and the products $\alpha_i\beta_i$ are all divisors of $2A$. The “horizontal” symmetry of the periods is classical, but we are also interested in the “vertical” symmetry of the γ_i and ν_i across the P residue classes. (Received September 15, 2008)