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Elena C. Covill, Mohammad Javaheri and Nikolai A. Krylov* (nkrylov@siena.edu),
Siena College, Department of Mathematics, 515 Loudon Road, Loudonville, NY 12211. *On the
subgroup generated by solutions of Pell's equation and elements of order 2 in the corresponding
quotient group.*

Equivalence classes of solutions of the Diophantine equation $a^2 + mb^2 = c^2$ form an infinitely generated abelian group G_m under the operation induced by complex multiplication, where m is a fixed square-free positive integer. Solutions of Pell's equation $x^2 - my^2 = 1$ generate a subgroup P_m of G_m . I will show how the sequence of decreasing convergents of the continued fraction expansion of $\sqrt{2}$ generates elements of order 2 in the quotient groups G_m/P_m for certain m . To do that I will use a homomorphism $f_m : G_m \rightarrow Cl(\mathbb{Q}[\sqrt{-m}])$ into the ideal class group of the imaginary quadratic field $\mathbb{Q}[\sqrt{-m}]$, and show that $P_m \subseteq \ker(f_m)$, when the ring of integers of the real quadratic field $\mathbb{Q}[\sqrt{m}]$ has units of norm -1. (Received September 13, 2016)