1046-14-889 **Harvey Cohn*** (hcohn@ccrwest.org), IDA Center for Communications Research, 4320 Westerra Court, San Diego, CA 92121. *Abelian Manifolds of arbitrary genus with Complex Multiplication.* Preliminary report.

Given a companion $(g \times g)$ matrix S for an irreducible monic equation with g real roots (listed in decreasing order) and integral matrices A, B commuting with S. Then we solve the matrix equation $W^2 - AW + B = 0$ (after diagonalizing by the Vandermondian). The diagonalized values of W are assumed totally complex with alternating signs for the imaginary surds. We also need a unimodular matrix U for which both U and US are symmetric. Then $Z = WU^{-1}$ is a Riemann Matrix $(Z = Z^t, \Im Z >> 0)$ and the Abelian period matrix $J = [E, Z]$ has the endomorphisms S, W, $(SJ = [S, ZS^t]$,$WJ = [ZU, ZA^t - BU^{-1}])$. The case $g = 1$ is elliptic, and Humbert (1899) showed for $g = 2$ this is the most general case (not likely for $g > 2$). If the signs of the surds are chosen by group theory (not order) Z could be imaginary quadratic (but singular). (Received September 12, 2008)