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Van H. Vu and **Melanie Matchett Wood*** (mwood@math.stanford.edu), Stanford University, Dept of Mathematics, Building 380, Stanford, CA 94305, and **Philip Matchett Wood**. *Using finite fields to prove things about the complex numbers.*

We show how number theory can help us to map complex numbers to finite fields, preserving specified algebraic incidences, even though there is no such ring homomorphism. This allows us to transfer results that can be proven over finite fields to the complex numbers, and we give applications in arithmetic combinatorics, such as sum-product estimates and the probability that a random matrix is singular. (Received September 08, 2010)