1016-14-60    **Jeremy L Martin\*** (`jmartin@math.ku.edu`), Department of Mathematics, 405 Snow Hall, 1460 Jayhawk Boulevard, Lawrence, KS 66045-7523, and **David Savitt** and **Ted Singer**. *Harmonic algebraic curves and noncrossing partitions.*

Motivated by Gauss's first proof of the Fundamental Theorem of Algebra, we study the topology of harmonic algebraic curves. By the maximum principle, a harmonic curve has no bounded components; its topology is determined by the combinatorial data of a *noncrossing matching*. Similarly, every complex polynomial gives rise to a related combinatorial object that we call a *basketball*, consisting of a pair of noncrossing matchings satisfying one additional constraint. We prove that every noncrossing matching arises from some harmonic curve, and deduce from this that every basketball arises from some polynomial. The result suggests deeper connections between real algebraic geometry and the combinatorics of noncrossing matchings. (Received January 24, 2006)