1012-14-69   **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.* Preliminary report.

Let $f(z)$ be a complex polynomial, and let R and I be the sets $\{\mathrm{Re}(f(z)) = 0\}$ and $\{\mathrm{Im}(f(z)) = 0\}$, regarded as plane curves in $\mathbb{R}^2$. As observed by Gauss (in his first proof of the Fundamental Theorem of Algebra), each of the curves R, I may be described topologically by a noncrossing matching. The pair of matchings thus obtained is a combinatorial invariant of the polynomial $f(z)$, called its *basketball*. We prove that every basketball is realized by some polynomial, and present several related problems for further study. (Received September 06, 2005)