1119-13-234 **Ashley K. Wheeler*** (math@uark.edu), Department of Mathematical Sciences, SCEN 309, University of Arkansas, Fayettevillle, AR 72701. *Principal minor ideals with matroid theory.* Preliminary report.

Let $K[X]$ denote the polynomial ring over an algebraically closed field K whose variables are entries in the generic $n \times n$ matrix X. Little is known about ideals $\mathfrak{B}_t$ given by the size t principal minors of X: $\mathfrak{B}_2$ is a prime, normal complete intersection; $\mathfrak{B}_{n-1}$ has two minimal primes, one is the determinantal ideal $\mathrm{I}_{n-1}(X)$ and the other is given by the Zariski closure of the set of rank n matrices whose size $n-1$ principal minors vanish.

This suggests a strategy for studying $\mathfrak{B}_t$ in general, namely by studying the locally closed sets of rank r matrices whose size t principal minors vanish. In the case where $r = t$, the problem reduces to studying pairs of closed sets in a Grassmannian. We show that if a subset of Plücker coordinates for $\mathrm{Grass}(n-2, n)$ defines an irreducible algebraic set, then it is a positroid variety. It follows by a 2014 result of Knutson, Lam, and Speyer that the Zariski closure of the set of rank t matrices whose size t principal minors vanish is normal, Cohen-Macaulay, and has rational singularities. (Received February 16, 2016)