

1157-13-498

**Josua C Illian\*** (jillian@oakland.edu) and **Li Li** (li2345@oakland.edu). *Gröbner basis for the double determinantal ideal*. Preliminary report.

Determinantal ideals provide important examples in commutative algebra and algebraic geometry. We consider a generalization closely related to Nakajima quiver varieties, called double determinantal ideals, and show that the natural generators form a Gröbner basis, using a method of S-pair construction. As a result, we generalize the combinatorial objects called pipe dreams, introduced by Allen Knutson, to explicitly describe the Stanley-Reisner simplicial complex of the double determinantal ideal and prove shellability, thus implying Cohen-Macaulayness. This provides an algebraic-combinatorial proof to a conjecture of the second author which was recently proved by Fieldsteel and Klein using liaison theory. (Received February 03, 2020)