1070-05-228 **Kevin Purbhoo***, Combinatorics & Optimization, University of Waterloo, 200 University Ave. W, Waterloo, Ontario , Canada. *Wronskians and the Cyclic Sieving Phenomenon.*

In 2008, Rhoades proved a cyclic sieving theorem for promotion on standard Young tableaux of rectangular shape: the number of fixed points of any power of promotion is obtained by evaluating the q-analogue of the hook length formula at a root of unity. Although this is a combinatorial statement (and can be reformulated as a problem of establishing a bijection between two sets), there is no known direct combinatorial proof of this statement: Rhoades' proof is representation-theoretic in nature.

I will talk about some new results concerning the geometry of the inverse Wronskian problem, which are motivated by questions in real algebraic geometry. Remarkably, these results give a new geometric proof of the cyclic sieving theorem for promotion. (Received February 13, 2011)