

Algebra/Topology Seminar

THOMAS ZASLAVSKY
Binghamton University, SUNY

NICE QUEENS – NO ATTACKS

Thursday, April 6, 2017

1:15 p.m. in ES-143

ABSTRACT. The q -Queens Problem, a generalization of the famous n -Queens Problem, asks for the number of ways to place q chess queens on an n -by- n chessboard so that none attacks another. Seth Chaiken, Christopher Hanusa, and I have made some progress on this problem by geometrizing it, applying the Ehrhart theory of counting lattice points in rational polytopes (in the Beck-Zaslavsky inside-out extension) to $2q$ -dimensional points that describe configurations of q queens. (This approach was suggested by Chaiken during my last visit to Albany a dozen years ago.) We proved that the function $f_n(q)$ that counts non-attacking configurations is a quasipolynomial function of n whose coefficients are polynomial functions of q .

However! This leaves many open questions before one can use it to get provable formulas for $f_q(n)$. We are now gathering in Albany to see if we can take a further leap towards a computable solution (which, to be sure, is a very distant goal).

I will describe the techniques just mentioned and some of our results, as well as the impressive computational contributions of our Czech mate Václav Kotěšovec.