

# Department of Mathematics and Computer Science

October 23, 2009

---

---

Friday, October 23, 4:00

COLLOQUIUM

Speaker: Darin Johnson

Old Main 2231

Title: “Limit Theorems for Generalized Rook Polynomials”

**Abstract:**

A board  $B = (h_1, \dots, h_n)$  is a set of  $n$  adjacent columns containing  $h_k \geq 0$  cells such that  $0 \leq h_1 \leq h_2 \leq \dots \leq h_n$  ( $n \in \mathbb{N}$ ).

In classic rook theory  $r_k(B)$  is the number of ways of placing  $k$  non-taking rooks on a board  $B$  and has an extensive literature. For numerous boards  $B$ , there exist bijections between  $r_k(B)$  and other combinatorial sequences. Goldman and Haglund [Journal of Combinatorial Theory, Series A (2000)] introduced the *i-creation rook placement* on a board  $B$  ( $i \in \mathbb{N} \cup \{0\}$ ) which generalizes the classic notion and has relationships to even more combinatorial sequences.

In this talk we discuss both both the classic and generalized rook placements. We then prove central and local limit theorems for 0 and 1-rook placements on certain boards. From these limit theorems asymptotic formulas can be deduced.

SNACKS IN FACULTY LOUNGE AT 3:30 PM.

EVERYONE WELCOME (EVEN IF YOU ARE UNABLE TO ATTEND THE TALK)

---

---