

DREXEL ANALYSIS SEMINAR

October 24, 2014

3-3:50 PM, Korman 245

**Speaker:** Robert Boyer (Drexel)

**Title:** Inequalities for Square Roots of Dilogarithms.

**Abstract:** In the study of the asymptotics of polynomials associated with integer partitions, the following harmonic functions arise

$$f_k(z) = \frac{1}{k} \Re \sqrt{Li_2(z^k)},$$

where  $k$  is a positive integer,  $z$  lies in the unit disk, and  $Li_2(z) = \sum_{n=1}^{\infty} z^n/n^2$  is the dilogarithm. It is important to determine when one of these functions dominates the others in understanding the asymptotic behavior of the partition polynomials. The main result is

$$f_k(z) < \max(f_1(z), f_2(z), f_3(z)), \quad k \geq 4, \quad 0 < |z| < 1.$$

I will discuss the background of this result and sketch some of the proofs.