

# SciMath Colloquium MathSci

Presents

## The Interlace Polynomial An Introduction

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Abstract: The interlace polynomial is a graph polynomial introduced in a paper by Arratia, Bollobas, and Sorkin in 2004. The interlace polynomial counts the number of Euler circuits in a 2-in, 2-out directed graph. Recent work has explored other application of the interlace polynomial on classes of special graphs. The question remains, what does the interlace polynomial count for any undirected graph in general?

I will begin the talk with an introduction to graph theory. Intuitively, a graph is a non-empty set of points together with a possibly empty set of connecting edges. The edges in a graph are represented by unordered pairs of vertices (i.e.  $a,b = b,a$ ). In a similar fashion, we define a directed graph (digraph) to be a graph with the edges being an ordered pair of vertices (i.e.  $(a,b)$  is the edge from  $a$  to  $b$ ). On a graph, a walk is a sequence of alternating vertices and edges, beginning and ending at a vertex. If the walk begins and ends at the same vertex it is a closed walk, and further, if it does not reuse any edge, the closed walk is called a circuit. An Euler circuit is a circuit using every edge in the graph exactly once. We will then look at a class of graphs called interlace graphs and introduce the interlace polynomial. Finally, we will extend the definition of the interlace polynomial to some specific classes of graphs.

About the speaker: Pari Ford is an Assistant Professor in the Mathematics Department at UNK. She received her bachelor's degree in mathematics from UNK and her Ph.D. from UNL. Her research interests include graph theory and combinatorics.

The UNK SciMath/MathSci Colloquium will present its first talk of the 2008 - 2009 academic year this Thursday, September 18th, at 3:30pm in COPH 130. This talk will be accessible to math and science faculty and students. We cordially invite everyone to attend. Refreshments will be served.