Student Seminar

Pi Mu Epsilon
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The Steiner radius and Steiner diameter of Connected Graphs*

by Josiah Reiswig
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*Full Title: The Steiner radius and Steiner diameter of Connected Graphs OR How I Learned to Stop Worrying and Solve Problems

A graph is a set of vertices and edges between the vertices. Graph models are useful in describing networks, molecules, and even spoken languages. With this framework in mind, the question "How many flights do I need to take to visit Barrow, Alaska?" becomes "What's the minimum number of edges between these two vertices on my graph?" As introduced by Chartrand in 1989, for a graph $G(V, E)$, the Steiner distance $d(S)$ for $S \subset V(G)$ is defined as the minimum size among all connected subgraphs whose vertex sets contain S. From these definitions we will define the k-Steiner radius, $srad_k(G)$, and k-Steiner diameter, $sdiam_k(G)$, of a connected graph. Since 1990, it has been conjectured that for all integers k and connected graphs G, $sdiam_k(G) \leq \frac{2(k+1)}{2k-1} sdiam_k(G)$. In this talk we will see that $sdiam_k(G) \leq \frac{k+3}{k+1} srad_k(G)$ for $k \geq 5$. Along the way the speaker will provide one proof, one joke, and one life lesson. The audience will be tasked with determining which is which.

Josiah Reiswig is a 4th year graduate student at the math department at the University of South Carolina. His interests are in structural graph theory, social choice theory, and racquetball. When not doing research or communicating mathematics through teaching, he can often be found in LeConte playing board games with his fellow graduate students.

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6:30 pm
LC 310

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