

Discrete Mathematics Seminar

Illinois State University

2:00–2:50 pm, October 8

Speaker: Mark Ellingham, Vanderbilt University

Orientable embeddings with two euler circuit faces

Orientable embeddings of graphs with a face that touches every edge at least once are useful in building DNA models of graphs. A particularly nice situation is when there is a face that touches every edge exactly once; then the face boundary is an euler circuit. An even nicer situation is when there are exactly two faces each of which touches every edge exactly once. We call these orientable two-euler-face, or OTEF, embeddings. There is also an idea of OTEF embeddings for digraphs, where there are two faces each bounded by a directed euler circuit. We consider some questions about the existence of OTEF embeddings. We show that an obvious necessary condition is not sufficient by giving examples of 4-edge-connected graphs with no OTEF embedding. On the positive side, we show that an eulerian graph in which every vertex has degree congruent to 2 modulo 4 has an OTEF embedding.

This is joint work with Joanna A. Ellis-Monaghan.

