

DIRECTED EMBEDDINGS OF DIGRAPHS

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(This talk is based on joint work with Blake Dunshee and Joanna Ellis-Monaghan.)

An embedding of a digraph in a surface is a *directed embedding* if every face boundary is a directed walk. We describe how directed embeddings were first considered by Tutte and his collaborators as part of work on dissecting a triangle into smaller triangles. We discuss when an embedding of an undirected graph can be turned into a directed embedding by orienting the edges, investigate when a partial directed embedding can be completed to a full directed embedding, and mention some results on the genus range and maximum genus of directed embeddings in both the orientable and nonorientable cases. We consider connections between the maximum orientable directed genus problem and delta-matroids.