Ordinary voltage graphs, pseudosurfaces, and derived graph embeddings with applications to graph embeddability

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Abstract

Ordinary voltage graph embeddings algebraically and combinatorially encode highly-symmetric embeddings of highly-symmetric graphs in surfaces and pseudosurfaces. We will survey our recent results that partially develop a homological understanding of the encoded embedding that considers specific algebraic and topological properties of the encoding. We will also consider a few infinite families of graphs and explain the way in which the symmetries of the graphs impact their embeddability in specific surfaces as embeddings encoded by ordinary voltage graph embeddings.

Keywords: voltage graphs, surface, pseudo surface.