

1154-05-780

Margaret Bayer, Bennet Goeckner* (goeckner@uw.edu) and **Marija Jelić Milutinović.**

Manifold Matching Complexes.

Given a graph, a matching is a collection of its edges such that no two of these edges share a common endpoint. The set of all possible matchings of a graph is called the matching complex of the graph. Much research has been conducted on the topology of matching complexes for various graph families, in particular for complete graphs and complete bipartite graphs. We instead ask the opposite question: Given a combinatorial manifold, when is it a matching complex? We completely characterize all graphs and manifolds that arise in this way. In particular, we show that, outside of dimension two, all manifold matching complexes are either spheres or balls. (Received September 10, 2019)