Compatibility fans realizing graphical nested complexes

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Abstract

Graph associahedra are polytopes realizing the nested complex N(G) on connected subgraphs of a graph G.
While all known explicit constructions produce polytopes with the same normal fan, the great variety of fan realizations
of classical associahedra and the analogy between finite type cluster complexes and nested complexes incited
us to transpose S. Fomin and A. Zelevinsky's construction of compatibility fans for generalized associahedra (2003)
to graph associahedra. Using a compatibility degree, we construct one fan realization of N(G) for each of its facets.
Specifying G to paths and cycles, we recover a construction by F. Santos for classical associahedra (2011) and extend
F. Chapoton, S. Fomin and A. Zelevinsky's construction (2002) for type B and C generalized associahedra.

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