

Minimal host graph

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For a given hypergraph H a *host graph* (or *support*) G is a graph spanned on the same set of vertices as H such that each hyperedge of H induces a connected subgraph in G [1]. A concept of host graph is often used to define hypergraph classes like hypertrees or hypercycles. Herein, we would like to explore a problem of finding minimal (with respect to number of edges) host graphs for a given hypergraph H .

We consider various classes of hypergraphs and discuss complexity status of the problem. Note that, finding minimal host graph is trivial for linear hypergraphs. However, it is NP-complete for simple hypergraphs.

References

- [1] C. Bujtás, Z. Tuza, V. Voloshin, Color-bounded hypergraphs, V: Host graphs and subdivisions, *Discussiones Mathematicae Graph Theory* 2011 (31) pp.223-238.