

VCU Discrete Mathematics Seminar

A survey of Berge-Turán hypergraph problems

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Wednesday, Mar. 10
1:00-1:50

Zoom! @ <https://vcu.zoom.us/j/92975799914>
password=graphs2357



For a graph F , we say that a hypergraph \mathcal{H} is a *Berge- F* if there is an injection $f : V(F) \rightarrow V(\mathcal{H})$ and bijection $f' : E(F) \rightarrow E(\mathcal{H})$ such that for every edge $uv \in E(F)$ we have $\{f(u), f(v)\} \subseteq f'(uv)$. Alternatively, \mathcal{H} is *Berge- F* if we can embed a distinct graph edge into each hyperedge of \mathcal{H} to obtain a copy of F . Note that for a fixed F there are many different hypergraphs that are a *Berge- F* and a fixed hypergraph \mathcal{H} can be a *Berge- F* for more than one graph F .

A hypergraph is *Berge- F -free* if it contains no subhypergraph isomorphic to any *Berge- F* . The maximum number of edges in an *Berge- F -free* n -vertex r -graph is denoted $ex_r(n, \text{Berge-}F)$. Observe that when $r = 2$, then a *Berge- F* is simply the graph F and then we are investigating the classical Turán function $ex(n, F)$.

In this talk we survey the behavior of the function $ex_r(n, \text{Berge-}F)$ and highlight many open problems.

For the DM seminar schedule, see:

<https://www.people.vcu.edu/~nobushaw/dms.html>