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Almost perfect graph classes

Perfect graphs form one of the central graph classes in structural graph theory. Many optimization problems that are hard in general become tractable on them. They are exactly the graphs with no odd holes or odd antiholes. A natural way to relax perfection is to ask whether a graph becomes perfect after deleting only a bounded number of vertices. We call such classes of graphs bounded-apex-perfect. In this talk, we characterize the sets H of at most two forbidden induced subgraphs for which the class of H -free graphs is bounded-apex-perfect. We will also explain how this characterization extends to several important subclasses of perfect graphs, including chordal, bipartite, complete multipartite, interval, and split graphs.

Joint work with Cicely Henderson, Hidde Koerts, Taite LaGrange, Sophie Spirkl, Massimo Vicenzo and Rebecca Whitman.