

Minimal Weak Separators and the Chords of Clique Trees

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Abstract

A *minimal weak separator* of a graph is an inclusion-minimal set of vertices whose removal would increase the distance between some pair of vertices—as opposed to a *minimal separator*, whose removal would disconnect some pair of vertices. The minimal separators of a chordal graph are easily identified as corresponding to the edges of *some* clique tree, while the minimal weak separators turn out to correspond to the edges of *no* clique tree; they are the chords of the union of all clique trees (the *clique thicket* of the chordal graph). The minimal weak separators also correspond to the edges of the overlap graph of the minimal separators.