

# Enumeration and Maximum Number of Minimal Connected Vertex Covers in Graphs

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CONNECTED VERTEX COVER is one of the classical problems of computer science, already mentioned in the monograph of Garey and Johnson [W.H. Freeman & Co., 1979]. Although the optimization and decision variants of finding connected vertex covers of minimum size or weight are well-studied, surprisingly there has been no previous work on the enumeration or maximum number of minimal connected vertex covers of a graph. In this work we show that the number of minimal connected vertex covers of a graph is at most  $1.8668^n$ , and these sets can be enumerated in time  $O(1.8668^n)$ . For graphs of chordality at most 5, we are able to give a better upper bound, and for chordal graphs and distance-hereditary graphs we are able to give tight bounds on the maximum number of minimal connected vertex covers.

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