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Parity Dissociation Graphs

Finding the dissociation number of an arbitrary graph (the cardinality of the largest set of vertices in an induced subgraph of maximum degree one) is difficult. If one is given a graph in which every maximal such set of vertices is maximum (in the spirit of well-covered graphs) then it is straight forward. Recent work has characterized graphs with this property that have girth 7 or more. Here we illustrate attempts to tighten the girth restriction as well as looking at a broader collection, those graphs in which every maximal dissociation set is of the same parity.