

The smallest class of binary matroids closed under direct sums and complements

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The class of cographs or complement-reducible graphs is the class of graphs that can be generated from K_1 using the operations of disjoint union and complementation. Such graphs are precisely the graphs that do not have the 4-vertex path as an induced subgraph. In this talk, we introduce the analogous class of binary comatroids as the class of matroids that can be generated from the empty matroid using the operations of direct sum and taking complements inside of binary projective space. We show that a proper flat of a binary comatroid is a binary comatroid. Our main result identifies those binary non-comatroids for which every proper flat is a binary comatroid. We also consider the corresponding results for ternary matroids in this talk.

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