

Abstract

The main result of this paper is a generalization of the classical blossom algorithm for finding perfect matchings. Our algorithm can efficiently solve Boolean CSPs where each variable appears in exactly two constraints (we call it edge CSP) and all constraints are *even Δ -matroid* relations (represented by lists of tuples). As a consequence of this, we settle the complexity classification of planar Boolean CSPs started by Dvořák and Kupec. Knowing that edge CSP is tractable for even Δ -matroid constraints allows us to extend the tractability result to a larger class of Δ -matroids that includes many classes that were known to be tractable before, namely *co-independent*, *compact*, *local* and *binary*.