We can associate an incidence graph with any CNF formula. It's a bipartite graph, in which he first part corresponds to variables and the second one to clauses. We can define matched formulas and biclique satisfiable formulas, based on this incidence graph. Both of these classes share an interesting property: Given a formula F which is matched or biclique satisfiable, F remains satisfiable even after we switch polarity of any occurrence of any literal. Class of formulas with this property is called var-satisfiable.

In this thesis, we consider a parameterized algorithm introduced by Stefan Szeider for deciding satisfiability of formulas with small deficiency. Here deficiency of a formula is defined as a difference between the number of clauses and the number of variables in the formula. We explain why this algorithm cannot be simply generalized for the case of biclique satisfiable formulas.

Since the problem of determining whether a formula is biclique satisfiable is NP-complete, we introduce a heuristic, which tries to find some biclique cover in time $\mathcal{O}(n^2e)$, where n denotes the number of variables and e denotes the length of the input formula. We performed experiments testing this heuristic on random formulas. The results of these experiments suggest, that there is a phase transition in the behaviour of the heuristic. We have also made experiments checking a phase transition of the property of a formula being matched. We compare the results of experiments on matched formulas to the results of experiments performed with the heuristic. We also compare the results of experiments on matched formulas with a theoretical bound which is due to John Franco and Allen Van Gelder.