Review 1:

Configuration systems:

10 or 15 years ago the first configuration systems have been rule-based systems (or in other words definite Horn formulas) describing the product structure. Various systems computing the bill of materials are based on this skeleton approach. The components itself have been represented as simple propositions. The next step was to represent the components by means of resources. A component supplies and demands some functionalities (properties). Say a component supplies the properties a and b and demands c and d. That can be encoded as definite Horn formulas.

Usually, a component is a complex technical device or in case of software components contains a lot of functional dependencies (preconditions, postconditions etc.) One of the problems increasing the complexity is to deal with helping variables. That occurs when we are interested only on some properties.

The challenge is to deal with functional behavior of the components. Our set-based approach for complex components does not allow nested components, but it is the first step in that direction. The general problem including nested components leads to the satisfiability problem for quantified Boolean formulas, but almost all problems are open.

Incremental choices: We don’t agree with the statement that incremental choices are the classic scenario. These incremental choices usually demand a simple and well-known high-level representation of the product structure, for example as and-or tree. In the general case such a representation occurs as global knowledge. A popular application of configuration systems for technical systems is the generation of bill of materials. In most cases to display the available options is hopeless, because - in German industry - the number of variants is almost all exponential.

But (as future work) it would be interesting to discuss the pro and cons of incremental systems based on our specification.

We can add some examples with helping variables.

Review 2: The introduction on how configuration problems arise can be improved.

Review 3: The paper “The complexity of Logic-Based Abduction” deals with a different problem. The abduction problem has as instance a single formula T, a set of variables H, and a set of variables M. The question is whether there is a subset S of H, such that T \union S \models M. In our configuration problem there is no formula T. Instead we have a set of formulas C and a target formula B and we ask whether there exists a consistent subset of components K with K \models B.

**Xishun,** I did not check papers that followed Gottlob’s and Eiter’s paper.

**Xishun**: (Review 4) Some aspects of argumention problems are related to our problems – as far as I understand - . But I did not find a paper with the complexity results for our classes.

The most serious problem is that we did not discuss the relationship to abduction and argumentation problems. But I was not aware of these problems. But checking very fast the publications I did not find a paper investing our classes and problems including the problems dealing with helping variables.