Updates to the paper DISC 3907
by Petr Hliněný, November 12, 2000

(I have discussed these updates with Mick van Gijlswijk...)

The following text replaces Lemma 3.1 and Lemma 3.2 and one subsequent paragraph on pages 5-6.

Lemma 3.1. *Let $A_1, A_2, \dots, A_n$, $B_1, B_2, \dots, B_m$ be pairwise noncrossing arc-connected sets inside the closure of an open region Ω whose boundary is a simple closed curve. Suppose each A_i intersects at most one B_j and vice versa. Moreover, suppose that $A_i \cap A_{i+1} \neq \emptyset$ for $i = 1, \dots, n-1$, and $B_i \cap B_{i+1} \neq \emptyset$ for $i = 1, \dots, m-1$. Let $A = A_1 \cup \ldots \cup A_n$, $B = B_1 \cup \ldots \cup B_m$. Then all points of B touching the boundary of Ω lie within one segment of the boundary of Ω determined by the touching points of A.*

Proof. Clearly A, B are arc-connected. If A, B are noncrossing, then any two points of $A \setminus B$ ($B \setminus A$) on the boundary of Ω can be connected by a simple curve inside $A \setminus B$ ($B \setminus A$, respectively); hence the conclusion follows by the Jordan curve theorem.

Otherwise, say, $A \setminus B$ is not arc-connected. Notice that no point of $A_i \cap A_{i+1}$, $i = 1, \dots, n-1$ belongs to B, and vice versa. of B_j's. It follows that, for some $1 \leq i \leq n$, the set $A_i \setminus B$ is not arc-connected. Only one set B_j, $1 \leq j \leq m$ may intersect A_i, but $A_i \setminus B_j$ is arc-connected by the assumptions of the lemma. This contradiction finishes the proof. $\square$

The following text replaces the first two sentences on page 10.

Without loss of generality we may assume that, for every variable or clause gadget of $G(\Phi)$, the rest of the graph belongs to the unbounded component of the complement of the representation of the gadget cycle. Contracting the gadget cycles and the cross-over boxes into points and the ladders into edges, we obtain a drawing of G'.

The next text replaces the third sentence of point 3. on page 10. End a paragraph after this text.

We denote by Γ the union of sets representing the gadget cycle, and by Δ the component of $\mathbb{R}^2 \setminus \Gamma$ containing the sets representing a, b, c, d, e, f, B, H. Moreover, we denote by Φ the union of sets representing the x-, y- and z-ladders (up to their ends a, c, b, d and e, f), and by Δ' the component of $\Delta \setminus \Phi$ including interior vertices of the path connecting B to H. Using Jordan curve theorem, we see that Δ' contains also interior vertices of the paths connecting c to e and d to f. The order in which sets representing vertices appear on the boundary of Δ' induces a closed walk in the clause gadget, and hence, using arc-connectivity of the sets, we find a simple closed curve $\omega \subset \Gamma \cup \Phi$ that traverses sets in $\Gamma \cup \Phi$ as they appear on the boundary of Δ'. Let Ω be the region bounded by ω and containing Δ'.

Please make sure that also our main address is correctly updated:

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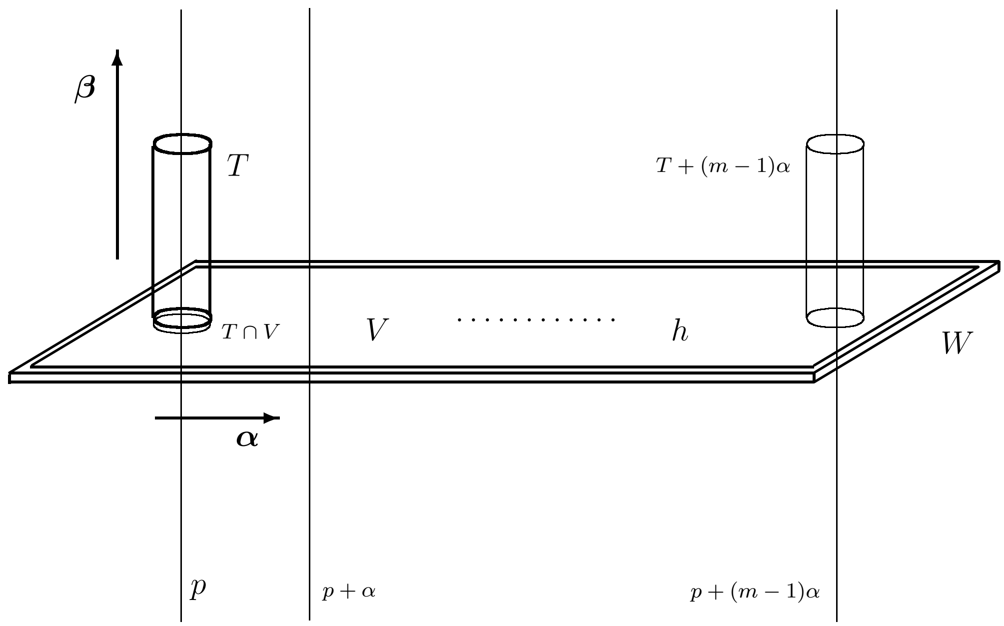
I have noticed that you changed arrows over vectors to boldface type. That needs to be changed also in Figure 11. Here is the new figure:



Thank you and regards...