Refutation of strong jump inversion and decidable copy of a saturated model of DCF_0

Abstract: From the paper's abstract, the definition of strong jump inversion is *not* tautologous, hence strong jump inversion is refuted. A computable enumeration of the types realized in models of DCF_0 is also refuted. The alleged fact that the saturated model of DCF_0 has a decidable copy is denied. Therefore these conjectures form a *non* tautologous fragment of the universal logic VŁ4.

We assume the method and apparatus of Meth8/VŁ4 with `T`autology as the designated proof value, **`F`** as contradiction, `N` as truthity (non-contingency), and `C` as falsity (contingency). The 16-valued truth table is row-major and horizontal, or repeating fragments of 128-tables, sometimes with table counts, for more variables. (See ersatz-systems.com.)

LET ~ Not, ¬ ; + Or, ∨, ∪, ⊔ ; - Not Or; & And, ∧, ∩, ⊓, ·; \ Not And;
> Imply, greater than, →, ⇒, ↦, ≻, ⊃, ↠ ;
< Not Imply, less than, ∈, ≺, ⊂, ⊬, ⊭, ↞, ≲ ;
= Equivalent, ≡, :=, ⟺, ↔, ≜, ≈, ≃ ; @ Not Equivalent, ≠;
% possibility, for one or some, ∃, ◊, M; # necessity, for every or all, ∀, □, L;
(z=z) `T` as tautology, ⊤, ordinal 3; (z@z) **`F`** as contradiction, Ø, Null, ⊥ , zero;
(%z>#z) `N` as non-contingency, Δ, ordinal 1;
(%z<#z) `C` as contingency, ∇, ordinal 2;
~(y < x) (x ≤ y), (x ⊆ y); (A=B) (A~B); (B>A) (A⊢B); (B>A) (A⊨B).
Note for clarity, we usually distribute quantifiers onto each designated variable.

From: Calvert, W.; Frolov, A.; Harizanov, V.; Knight, J.; McCoy, C; Soskova, A.; Vatev, S. (2018). Strong jump inversion. Journal of logic and computation. 28:7:1499–1522. mccoy@up.edu academic.oup.com/logcom/article-abstract/28/7/1499/5091964?redirectedFrom=fulltext

"Abstract: We say that a structure $\mathcal{A}$ admits *strong jump inversion* provided that for every oracle X, if X' computes $D(\mathcal{C})'$ for some $\mathcal{C}\cong\mathcal{A}$, then X computes $D(\mathcal{B})$ for some $\mathcal{B}\cong\mathcal{A}$." (A.1.1)

Remark A.1.1: We code X' as X and D(C)' as D(C).

LET p, q, r, s, x: A, B, C, D, X

((%(r=p)&#x)>(s&r))>((%(q=p)&#x)>(s&q)) ;

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TTTT TTTT TTTT TTTT(8),
TTTT CTTT TTTT CTTT(8)
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(A.1.2)

"… In order to apply our general result, we produce a computable enumeration of the types realized in models of DCF_0. This also yields the fact that the saturated model of DCF_0 has a decidable copy."

Because Eq. A.1.2 as rendered is *not* tautologous, the definition of strong jump inversion is refuted. What follows is that a computable enumeration of the types realized in models of DCF_0 is also refuted. The alleged fact that the saturated model of DCF_0 has a decidable copy is denied.