Fragment of Logic of Finite Constant Domains Without Disjunction and Existential Quantifier

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It is known that the fragment of predicate intuitionistic logic in the language without the disjunction and existential quantifier is complete under Kripke frames with finite domains ([2]). On the other hand, D. Gabbay has proved [1] that the fragment of predicate intuitionistic logic without the disjunction and existential quantifier coincides with a similar fragment of logic of constant domains.

In this paper, we prove that it is impossible to combine of these two results, i.e. the fragment of logic of finite constant domains without the disjunction and existential quantifier does not coincide with a similar fragment of the logic of constant domains and with a similar fragment of the logic of finite domains.

Namely, we construct a formula which contains neither disjunction nor existential quantifier and is valid in all Kripke frames with finite constant domains but refutable in the logic of constant domains and in the logic of finite domains.

[1] D. Gabbay, *Semantical investigations in Heyting's intuitionistic logic*, D. Reidel Publ. Co., Dordrecht, Holland, 1981.

[2] P. Schreiner, *Fragment of predicate intuitionistic logic complete under Kripke frames with finite domains*, Abstract of Invited and Contributed Talks, Logic Colloquium, Utrecht, 1999, P. 55.

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