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Left-handed completeness for Kleene algebra, via cyclic proofs. (English) [Zbl 1415.68124](#)

Barthe, Gilles (ed.) et al., LPAR-22. 22nd international conference on logic for programming, artificial intelligence and reasoning, Awassa, Ethiopia, November 17–21, 2018. Selected papers. Manchester: Easy-Chair. EPiC Ser. Comput. 57, 271-289 (2018).

Summary: We give a new proof that the axioms of left-handed Kleene algebra are complete with respect to language containments. This proof is significantly simpler than both the proof of *M. Boffa* (which relies on Krob's completeness result) [RAIRO, Inform. Théor. Appl. 29, No. 6, 515–518 (1995; [Zbl 0881.68071](#))], and the more recent proof of *D. Kozen* and *A. Silva* [Lect. Notes Comput. Sci. 7560, 162–178 (2012; [Zbl 1364.68268](#))]. Our proof builds on a recent non-well-founded sequent calculus which makes it possible to explicitly compute the invariants required for left-handed Kleene algebra.

For the entire collection see [[Zbl 1407.68021](#)].

MSC:

[68Q45](#) Formal languages and automata
[03B70](#) Logic in computer science

Cited in **1** Document

Keywords:

[automata](#); [axiomatisation](#); [cyclic proofs](#); [induction](#); [Kleene algebra](#); [regular languages](#)

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