

Baaz, Matthias; Hájek, Petr; Montagna, Franco; Veith, Helmut

Complexity of t-tautologies. (English) [Zbl 1006.03022](#)

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The paper focuses on propositional fuzzy logics based on continuous triangular norms (t-norms). After a brief overview of some principal results in the theory of t-norms, the proof of the main theorem is provided: The set of all t-tautologies (i.e. tautologies w.r.t. arbitrary continuous t-norm) is coNP-complete. From this, it also follows that the universal first-order theory of t-algebras (i.e. algebras $\langle [0, 1], \star, \rightarrow, 0, 1 \rangle$ where \star is a continuous t-norm and \rightarrow is its residuum) is coNP-complete.

Reviewer: [Vilém Novák \(Ostrava\)](#)

MSC:

[03B52](#) Fuzzy logic; logic of vagueness

[03B25](#) Decidability of theories and sets of sentences

[03D15](#) Complexity of computation (including implicit computational complexity)

[68Q17](#) Computational difficulty of problems (lower bounds, completeness, difficulty of approximation, etc.)

Cited in **1** Review
Cited in **14** Documents

Keywords:

fuzzy logic; triangular norm; NP completeness

Full Text: [DOI](#)

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