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A semantic proof of polytime soundness of light affine logic. (English) [Zbl 1142.68360](#)

Hirsch, Edward A. (ed.) et al., Computer science – theory and applications. Third international computer science symposium in Russia, CSR 2008 Moscow, Russia, June 7–12, 2008. Proceedings. Berlin: Springer (ISBN 978-3-540-79708-1/pbk). Lecture Notes in Computer Science 5010, 134-145 (2008).

Summary: We define a denotational semantics for Light Affine Logic (LAL) which has the property that denotations of functions are polynomial time computable by construction of the model. This gives a new proof of polytime-soundness of LAL which is considerably simpler than the standard proof based on proof nets and also is entirely semantical in nature. The model construction uses a new instance of a resource monoid; a general method for interpreting variations of linear logic with complexity restrictions introduced earlier by the authors.

For the entire collection see [\[Zbl 1136.68005\]](#).

MSC:

- [68Q15](#) Complexity classes (hierarchies, relations among complexity classes, etc.)
- [03F52](#) Proof-theoretic aspects of linear logic and other substructural logics
- [68Q55](#) Semantics in the theory of computing

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