Erratum

Erratum to: “A new framework for declarative programming”☆

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Unfortunately, due to technical errors the abstract was published incorrectly. The correct abstract is as follows:

Abstract

We propose a new framework for the syntax and semantics of Weak Hereditarily Harrop logic programming with constraints, based on resolution over $\tau$-categories: finite product categories with canonical structure.

Constraint information is directly built-in to the notion of signature via categorical syntax. Many-sorted equational constraints are a special case of the formalism which combines features of uniform logic programming languages (modules and hypothetical implication) with those of constraint logic programming. Using the canonical structure supplied by $\tau$-categories, we define a diagrammatic generalization of formulas, goals, programs and resolution proofs up to equality (rather than just up to isomorphism).

We extend the Kowalski–van Emden fixed point interpretation, a cornerstone of declarative semantics, to an operational, non-ground, categorical semantics based on indexing over sorts and programs.

We also introduce a topos-theoretic declarative semantics and show soundness and completeness of resolution proofs and of a sequent calculus over the categorical signature. We conclude with a discussion of semantic perspectives on uniform logic programming.

☆ PII of original article S0304-3975(01)00308-5

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