

Generic Trace Theory

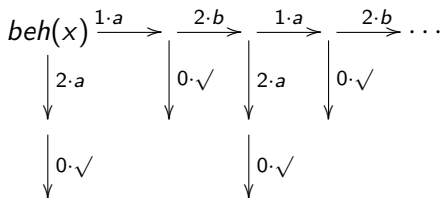
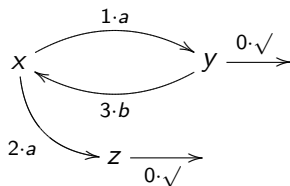
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08.12.2009, Schloss Dagstuhl, "Coalgebraic Logics"

Outline

- ▶ Behaviour of Coalgebras
- ▶ Finite Trace Semantics
- ▶ Finite Trace Logics

Behaviour of Set-Coalgebras



Counter-Examples

Examples, where final coalgebra semantics in Set is inadequate

- ▶ non-deterministic coalgebra automata
- ▶ probabilistic labelled transition systems

min-semiring, fuzzy lts, more?

An Example of Trace Semantics

graded Its finite and infinite traces

Finite Trace Map as an Algebra Morphism

Finite Trace Semantics by Initial Sequence

Inductive Counting

Finite Trace Semantics in Our Example

Finite Trace Equivalence

An Example of Finite Trace Logics

finite trace logics for graded LTS emphasise counting

An Example of Finite Trace Logics

develop semantics as an algebra morphism

Commutative Monads and Closed Categories

A Dual Adjunction on $B - Alg$

Finite Trace Logics

Finite Trace Logics of Graded LTS

Adequacy

Expressivity

Finite Trace Logics

- ▶ submitted

Upcoming Work

- ▶ Finite Trace Semantics in Eilenberg-Moore Categories
- ▶ Calculus of Finite Traces; Completeness
- ▶ Infinite Trace Semantics; Relation with Coalgebraic Automata Theory

Future Work

Thank you for your attention!