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Jeffrey, Alan; **Rathke, Julian**

A theory of bisimulation for a fragment of concurrent ML with local names. (English)

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Summary: Concurrent ML is an extension of Standard ML with π-calculus-like primitives for multi-threaded programming. CML has a reduction semantics, but to date there has been no labelled transition system semantics provided for the entire language. In this paper, we present a labelled transition semantics for a fragment of CML called $\mu\nu$CML which includes features not covered before: dynamically generated local channels and thread identifiers. We show that weak bisimilarity for $\mu\nu$CML is a congruence, and coincides with barbed bisimulation congruence. We also provide a variant of Sangiorgi's normal bisimulation for $\mu\nu$CML, and show that this too coincides with bisimilarity.

MSC:

68Q85 Models and methods for concurrent and distributed computing (process algebras, bisimulation, transition nets, etc.)

Cited in **13** Documents

Keywords:

Concurrency; Higher-order functions; Bisimulation; Local names

Software:

ML

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