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On the concurrent computational content of intermediate logics. (English) Zbl 1433.68229

Summary: We provide a proofs-as-concurrent-programs interpretation for a large class of intermediate logics that can be formalized by cut-free hypersequent calculi. Obtained by adding classical disjunctive tautologies to intuitionistic logic, these logics are used to type concurrent λ-calculi by Curry-Howard correspondence; each of the calculi features a specific communication mechanism, enhanced expressive power when compared to the λ-calculus, and implements forms of code mobility. We thus confirm Avron’s 1991 thesis that intermediate logics formalizable by hypersequent calculi can serve as basis for concurrent λ-calculi.

MSC:
68Q85 Models and methods for concurrent and distributed computing (process algebras, bisimulation, transition nets, etc.)
03B40 Combinatory logic and lambda calculus
03B55 Intermediate logics

Keywords:
proofs-as-programs; intermediate logics; concurrency; natural deduction; λ-calculus; hypersequents

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References:
[22] Griffin, T. G., A formulae-as-type notion of control, (POPL 1990 (1990))
[23] Hirai, Y., A lambda calculus for Gödel-Dummett logic capturing waitfreedom, (FLOPS 2012 (2012)), 151-165 · Zbl 1354.03009
[29] Milner, R., Lectures on a calculus for communicating systems, (Seminar on Concurrency (1984), Springer), 197-219
[34] Prawitz, D., Ideas and results in proof theory, (Proceedings of the Second Scandinavian Logic Symposium (1971), North-Holland) · Zbl 0226.02003

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