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Shallow confluence of conditional term rewriting systems. (English) Zbl 1156.68028
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Summary: Recursion can be conveniently modeled with left-linear positive/negative-conditional term rewriting systems, provided that non-termination, non-trivial critical overlaps, non-right-stability, non-normality, and extra variables are admitted. For such systems we present novel sufficient criteria for shallow confluence and arrive at the first decidable confluence criterion admitting non-trivial critical overlaps. To this end, we restrict the introduction of extra variables of right-hand sides to binding equations and require the critical pairs to have somehow complementary literals in their conditions. Shallow confluence implies [level] confluence, has applications in functional logic programming, and guarantees the object-level consistency of the underlying data types in the inductive theorem prover QuodLibet.

MSC:

68Q42 Grammars and rewriting systems

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conditional term rewriting systems; positive/negative-conditional term rewriting systems; criteria for confluence

Software:

Isabelle; LISP; ML ; NQTHM; QuodLibet

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