

Root Stabilisation Using Dependency Pairs

Erratum

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1 Non-Root Steps

In the definition of relative root stabilisation and in every location afterwards where $\dot{\rightarrow}_S$ is used, \rightarrow_S should be used instead. Otherwise, a counterexample exists to the following theorem (Theorem 3.1):

Theorem 1.1. *It holds that $\text{SN}(\dot{\rightarrow}_R/\dot{\rightarrow}_S)$ iff there exists a reduction pair (\succ, \succ) such that $S \subseteq \succ$ and $R \subseteq \succ$.*

Consider the following two sets of rewrite rules:

$$\begin{aligned} R &= \{a \rightarrow b\} \\ S &= \{b \rightarrow a\} \end{aligned}$$

We have $\text{SN}(\dot{\rightarrow}_R/\dot{\rightarrow}_S)$: The only possible reduction is $a \dot{\rightarrow} b$. However, no reduction pair with the required properties exists, as that would imply $a \succ b$ and $b \succ a$, which by compatibility gives either $a \succ a$ or $b \succ b$.

Besides the counterexample, \rightarrow_S also makes more sense in case S contains any collapsing rules.

2 Dependency Graph

The dependency graph in Example 4.2 should be:

$$\begin{array}{c} \textcircled{\curvearrowright} \\ f(h(x)) \rightarrow f(x) \\ a \rightarrow g(a) \xrightarrow{\quad\quad\quad} g(h(x)) \rightarrow h(h(x)) \\ \searrow \quad \quad \quad \nearrow \\ \quad \quad \quad g(a) \rightarrow h(b) \end{array}$$