

Erratum to the paper “Metaconfluence of Calculi with Explicit Substitutions at a Distance”

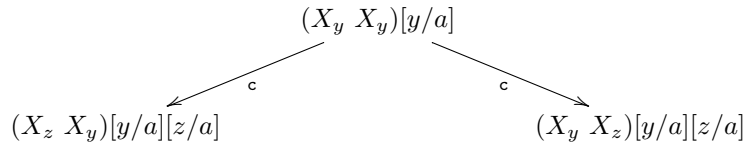
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In [1], we proved metaconfluence of three calculi with explicit substitutions without including equational axioms. Nevertheless, a correction in the proof of the case of the structural λ -calculus is necessary. Our approach is based on the Hindley-Milner Theorem, where we assume that the following rewriting system do not have critical pairs:

$t[x/u]$	\mapsto_c	$t_{(x y)}[x/u][y/u]$	if $ t _x > 1$
$t[x/u]$	\mapsto_d	$t\{x/u\}$	if $ t _x = 1$
$t[x/u]$	\mapsto_w	t	if $ t _x = 0$

However, the non-determinism of the rule \mapsto_c can lead to non-confluent terms. For instance, consider the following divergence:



Note that the terms $(X_z X_y)[y/a][z/a]$ and $(X_y X_z)[y/a][z/a]$ are both in normal form. In order to close this diagram, one proceed as follows: $(X_z X_y)[y/a][z/a] =_\alpha (X_y X_z)[z/a][y/a] \equiv (X_y X_z)[y/a][z/a]$, where \equiv is an axiom for commutation of independent substitutions. A detailed proof using this approach can be found at [2].

Acknowledgement

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References

- [1] F. L. C. de Moura, D. Kesner, and M. Ayala-Rincón. Metaconfluence of Calculi with Explicit Substitutions at a Distance. In Venkatesh Raman and S. P. Suresh, editors, *34th International Conference on Foundation of Software Technology and Theoretical Computer Science (FSTTCS 2014)*, volume 29 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 391–402, Dagstuhl, Germany, 2014. Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik.
- [2] F. Renaud. *Les Ressources Explicites vues par la Théorie de la Réécriture*. PhD thesis, Université Paris Diderot - Paris 7, 2011.