

Problem #56

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Summary: Does the Church-Rosser property of abstract reduction systems imply decreasing Church-Rosser?

An abstract reduction system is “decreasing Church-Rosser”, if there exists a labelling of the reduction relation by a well-founded set of labels, such that all local divergences can be completed to form a “decreasing diagram” (see [Oos92] for precise definitions). Does the Church-Rosser property imply decreasing Church-Rosser? That is, is it always possible to localize the Church-Rosser property? This is known to be the case for (weakly) normalizing and finite systems.

Remark

It is now known to hold for countable systems [Man93],[vO94, Cor. 2.3.30].

Bibliography

- [Man93] Ken Mano, September 1993. Personal communication.
- [Oos92] V. van Oostrom. Confluence by decreasing diagrams. IR 298, Vrije Universiteit, Amsterdam, The Netherlands, August 1992. To appear in *Theoretical Computer Science*.
- [vO94] Vincent van Oostrom. *Confluence for Abstract and Higher-Order Rewriting*. PhD thesis, Vrije Universiteit, Amsterdam, March 1994.