Problem #52 (Solved !)

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Date: June 1993

Summary: Is there a fixed point combinator Y for which $Y \leftrightarrow^* Y(SI)$?

It has been remarked by C. Böhm [Bar84] that Y is a fixed point combinator if and only if $Y \leftrightarrow^* (SI)Y$ (Y and SIY are convertible). Also, if Y is a fixed point combinator, then so is $Y(SI)$. Is there is a fixed point combinator Y for which $Y \leftrightarrow^* Y(SI)$?

Remark

This was solved by Benedetto Intrigila [Int97] who showed that there is no such fixed point combinator.

Bibliography

[Bar84] Henk Barendregt. *The Lambda Calculus, its Syntax and Semantics*. North-Holland, Amsterdam, second edition, 1984.

[Int97] Benedetto Intrigila. Non-existent statman's double fixed point combinator does not exist, indeed. *Information and Computation*, 137(1):35–40, 1997.

January 22, 2014