

## Problem #52 (Solved !)

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*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.