

# TLCA List of Open Problems

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## Problem # 10

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**Statement.** Do uniform universal generators exist?

A term  $M$  is a *uniform universal generator* iff there is a non-trivial context  $C[*]$  such that  $M \rightarrow C[N]$  for each closed term  $N$ . The above question was first stated in [Statman, 1993], and it is open for either CL (with weak reduction) or lambda-calculus (with  $\beta$ - or  $\beta\eta$ -reduction). If the context  $C[*]$  is required to have the form  $P*$ , so  $C[N]$  is  $PN$ , then it can be shown [Statman, 1993] that uniform universal generators do not exist for combinatory logic.

## References

[Statman, 1993] Statman, R. (1993). Some examples of non-existent combinators. *Theoretical Computer Science*, 121:441–448.