Representation of two strings $w, w'$ of the same length $n$:

$w = w_1 \dots w_n$

$w' = w'_1 \dots w'_n$

F - is an unary constant

Each letter is represented by a projection $\lambda z_1 \dots z_k . z_i$ where $k$ is sufficiently large.

$\lambda F$?

$$x_s\, f_1^{k+1}\, \lambda f_1^k . x_m\, f_2^{k+1} (\lambda f_2^k . \dots x'_r\, f_i^{k+1} (\lambda f_i^k . x'_r\, f_{i+1}^{k+1} (\lambda f_{i+1}^k . x_m\, f_{i+2}^{k+1} (\lambda f_{i+2}^k . \dots$$

$$x''_m\, f_n^{k+1} (\lambda f_n^k . x_e\, e^{k+1} (\lambda e^k . F(f_1^k w_1 w'_1 (f_2^k w_2 w'_2 (\dots (f_n^k w_n w'_n e^k) \dots)))) \dots)) \dots)$$

Maybe this should be inserted only in the final generation

$x_s, x'_m, x'_r, x''_r, x_e$ – arguments of the unknown are substituted for these variables

$f_1^{k+1}, \dots, f_n^{k+1}, e^{k+1}$ – new generation of cons'; $(k+1)$-st generation

$f_1^k, \dots, f_n^k, e^k$ – old generation of cons'; $k$-th generation

F – unary constant

The configuration above serves to simulate one step of rewriting

$$w_i w_{i+1} \dots \Rightarrow_r w'_i w'_{i+1} \dots$$

The ultimate goal is to check

$$0^n \Rightarrow^* 1^n$$

This will be done within some number $N$ of generations.

Checks to be done:

- $e^k$ is an active argument that is not a constant
- $w_i, w'_i$ are local values (we can increase them and check if both $w_i$ and $w_{i+1}$ work)
- the sequence of $f$-s: $f_1^k\, f_i^{k+1}\, f_i^k\, f_{i+1}^k\, f_{i+1}^{k+1}\, f_n^k\, e^k$
- $w_i$ and $w'_i$ are compatible, in particular that $w_i w_{i+1}$ and $w'_i w'_{i+1}$ correspond to a rewrite rule
- We replace $f_i^k w_i w'_i$ with $f_i^{k+1} w'_i w''_i$ – $w''_i$ must be guessed so $x'_m$ need to vary