Figure 1: timing-pattern

1

Figure 2: timing-n-polymorphic-universes param-1-n 0
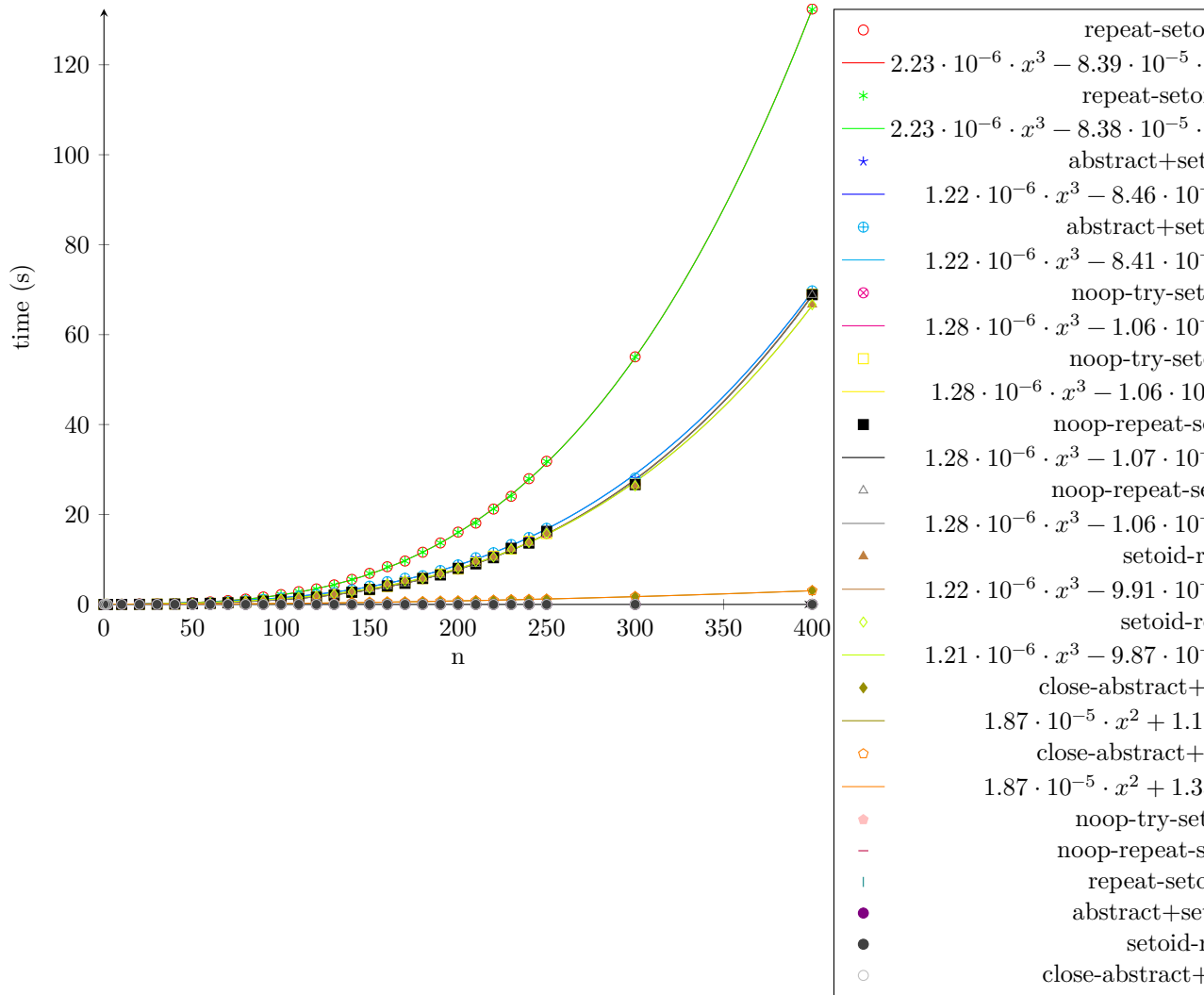
time (s)

120

100

80

60

40

20

0

0   50   100   150   200   250   300   350   400

n

repeat-seto
$2.23 \cdot 10^{-6} \cdot x^3 - 8.39 \cdot 10^{-5} \cdot$
repeat-seto
$2.23 \cdot 10^{-6} \cdot x^3 - 8.38 \cdot 10^{-5} \cdot$
abstract+set
$1.22 \cdot 10^{-6} \cdot x^3 - 8.46 \cdot 10^{-5}$
abstract+set
$1.22 \cdot 10^{-6} \cdot x^3 - 8.41 \cdot 10^{-5}$
noop-try-set
$1.28 \cdot 10^{-6} \cdot x^3 - 1.06 \cdot 10^{-5}$
noop-try-set
$1.28 \cdot 10^{-6} \cdot x^3 - 1.06 \cdot 10^{-5}$
noop-repeat-se
$1.28 \cdot 10^{-6} \cdot x^3 - 1.07 \cdot 10^{-5}$
noop-repeat-se
$1.28 \cdot 10^{-6} \cdot x^3 - 1.06 \cdot 10^{-5}$
setoid-r
$1.22 \cdot 10^{-6} \cdot x^3 - 9.91 \cdot 10^{-5}$
setoid-r
$1.21 \cdot 10^{-6} \cdot x^3 - 9.87 \cdot 10^{-5}$
close-abstract+
$1.87 \cdot 10^{-5} \cdot x^2 + 1.1$
close-abstract+
$1.87 \cdot 10^{-5} \cdot x^2 + 1.3$
noop-try-set
noop-repeat-s
repeat-set
abstract+se
setoid-r
close-abstract+

Figure 3: timing-repeat-setoid-rewrite-under-binders

3
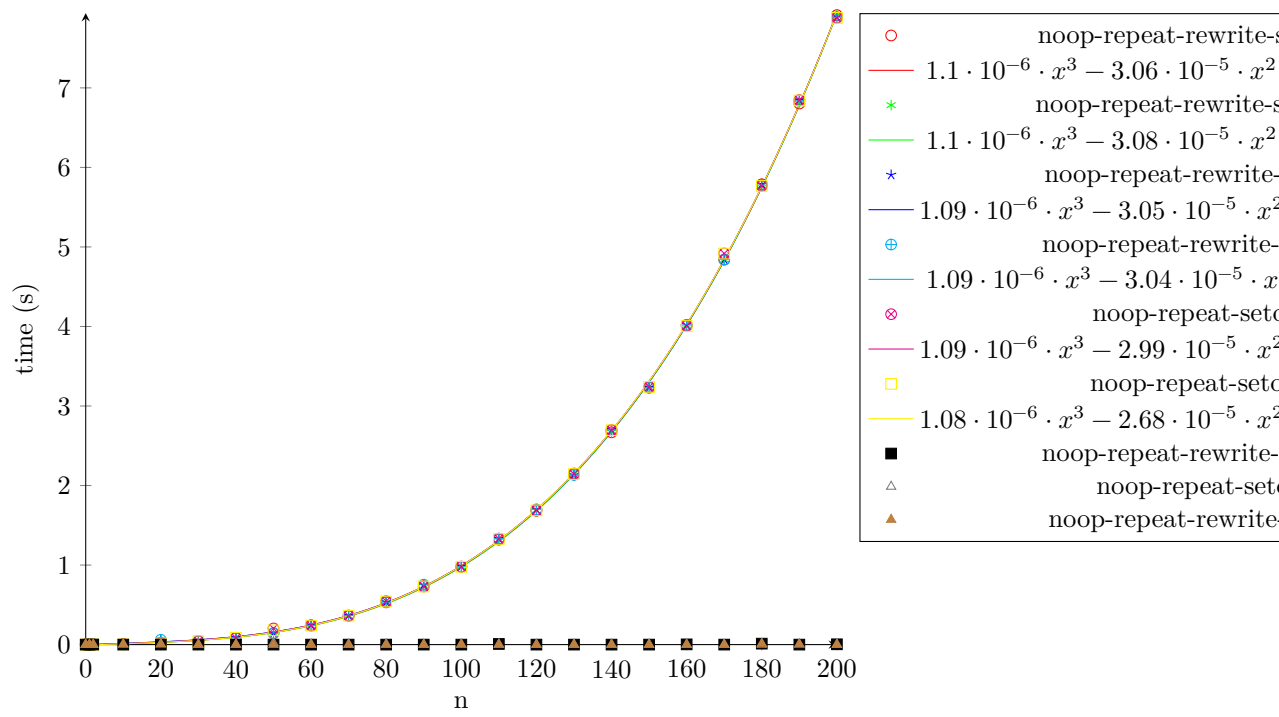
Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

4

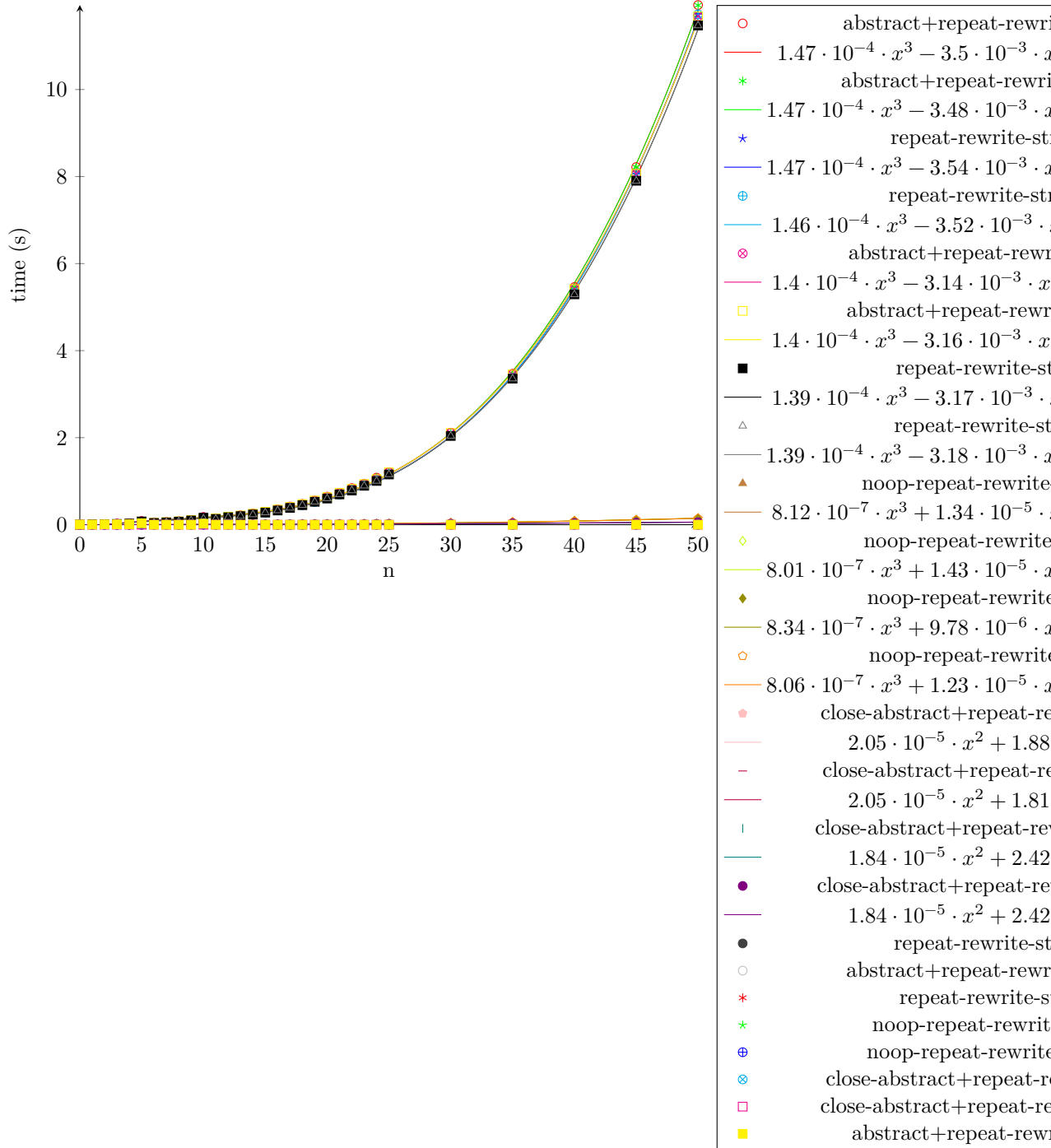Figure 5: timing-rewrite-strat-under-binders

The plot shows time (s) on the y-axis (0 to 4) versus n on the x-axis (0 to 400).

Legend entries:

- abstract+autorewrite
  $2.75 \cdot 10^{-5} \cdot x^2 - 9.82 \cdot 10^{-4} \cdot$
- abstract+autorewrite
  $2.75 \cdot 10^{-5} \cdot x^2 - 1.01 \cdot 10^{-3} \cdot$
- abstract+rewrite!-
  $2.7 \cdot 10^{-5} \cdot x^2 - 8.12 \cdot 10^{-4} \cdot x$
- abstract+rewrite!-u
  $2.69 \cdot 10^{-5} \cdot x^2 - 8.17 \cdot 10^{-4} \cdot$
- rewrite!-real
  $1.82 \cdot 10^{-5} \cdot x^2 - 9.49 \cdot 10^{-4} \cdot$
- autorewrite-real
  $1.84 \cdot 10^{-5} \cdot x^2 - 1.04 \cdot 10^{-3} \cdot$
- autorewrite-user
  $1.84 \cdot 10^{-5} \cdot x^2 - 1.06 \cdot 10^{-3} \cdot$
- rewrite!-user
  $1.82 \cdot 10^{-5} \cdot x^2 - 9.5 \cdot 10^{-4} \cdot x$
- close-abstract+autorew
  $9.07 \cdot 10^{-6} \cdot x^2 + 3.1 \cdot 10^{-5} \cdot x$
- close-abstract+autorew
  $9.06 \cdot 10^{-6} \cdot x^2 + 3.99 \cdot 10^{-5} \cdot$
- close-abstract+rewrit
  $8.69 \cdot 10^{-6} \cdot x^2 + 1.15 \cdot 10^{-4} \cdot$
- close-abstract+rewrit
  $8.7 \cdot 10^{-6} \cdot x^2 + 1.17 \cdot 10^{-4} \cdot x$
- autorewrite-noop-u
  $2.3 \cdot 10^{-5} \cdot x - 9.24 \cdot$
- autorewrite-noop-r
  $2.33 \cdot 10^{-5} \cdot x - 9.27$
- rewrite?-noop-us
  $2.39 \cdot 10^{-5} \cdot x - 8.96$
- rewrite?-noop-re
  $2.4 \cdot 10^{-5} \cdot x - 9.03 \cdot$
- rewrite!-sys
- abstract+rewrite!-
- rewrite?-noop-sy
- close-abstract+rewrit
- close-abstract+autorew
- autorewrite-sys
- autorewrite-noop-
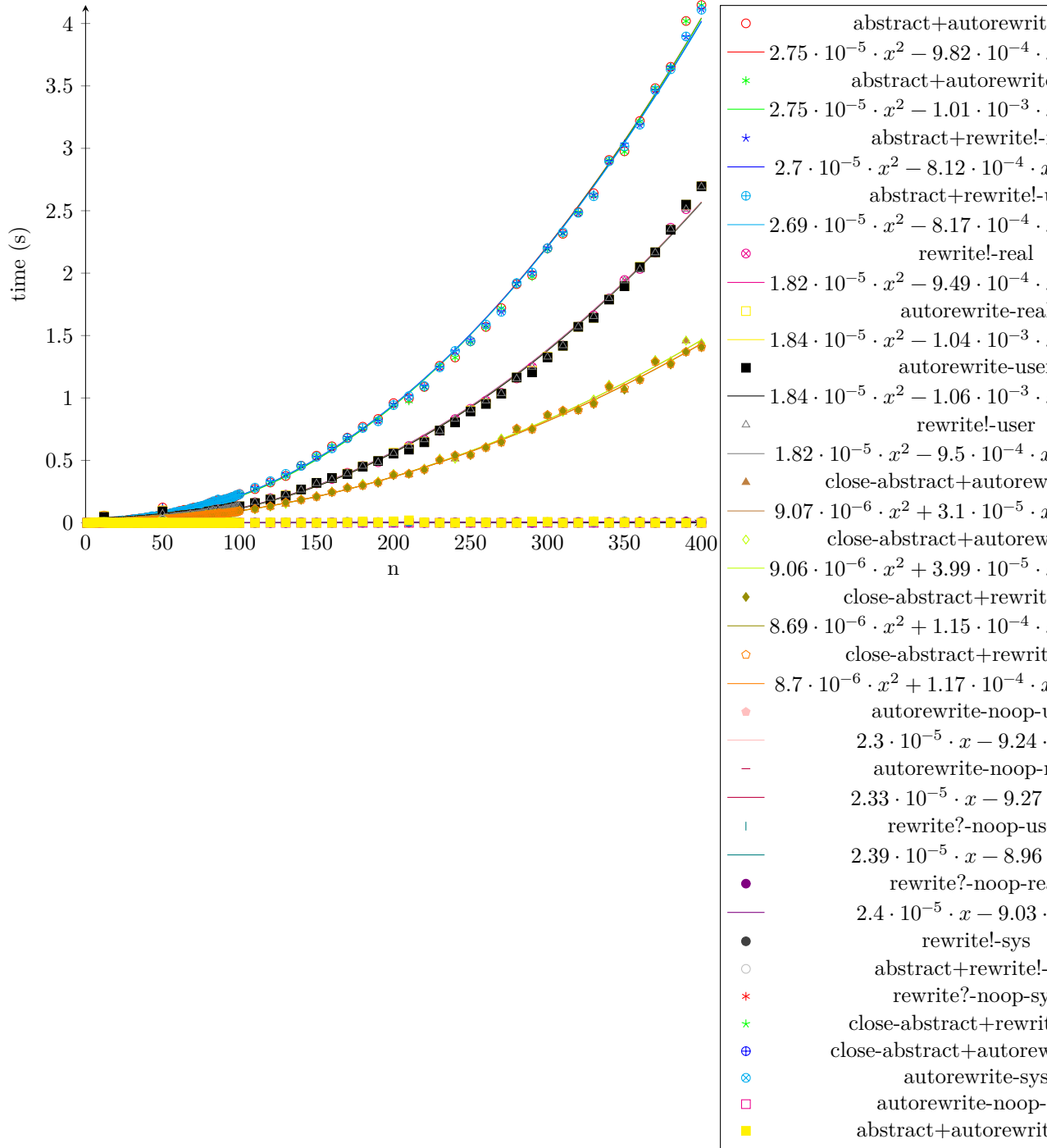- abstract+autorewrit

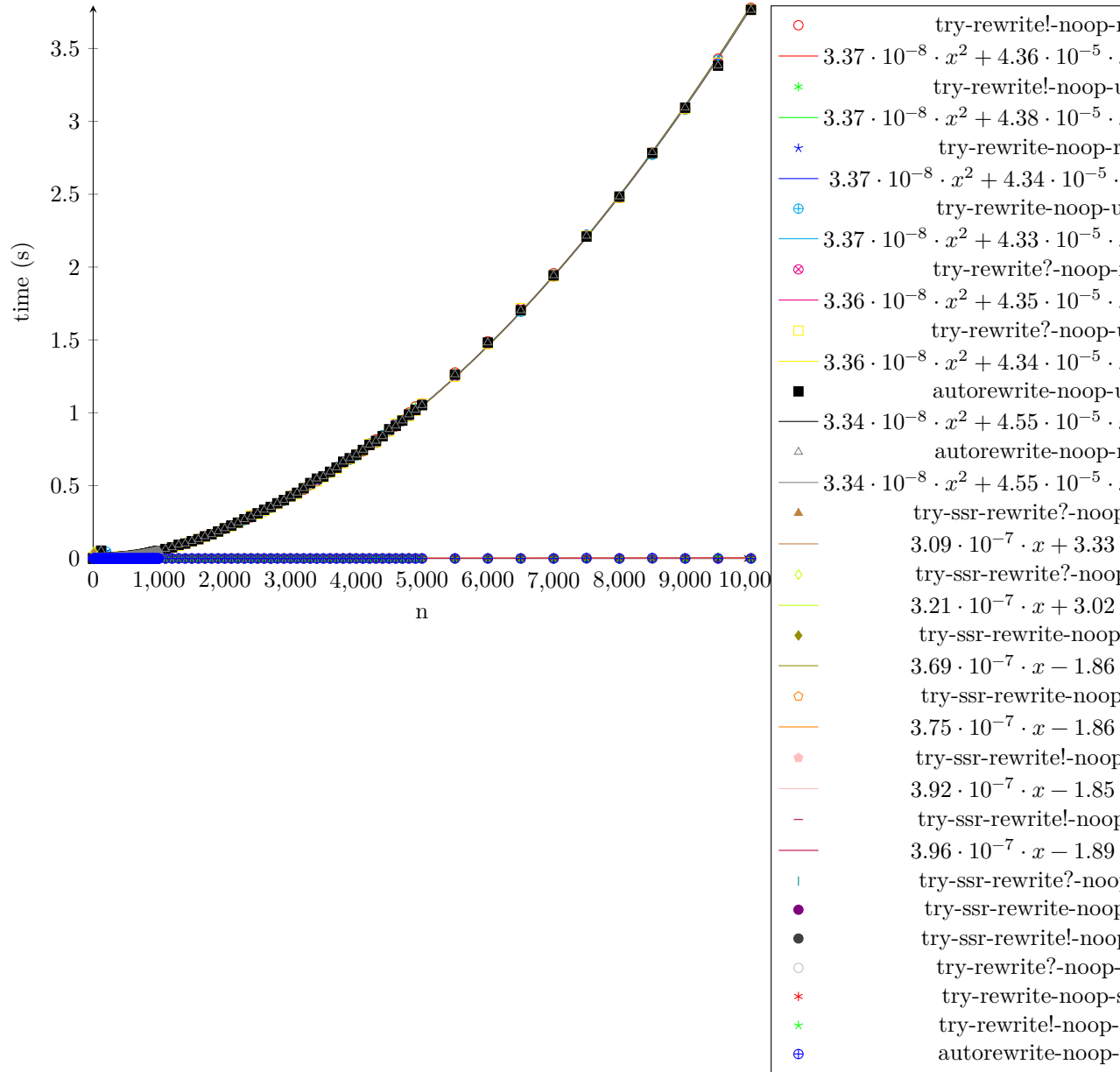Figure 6: timing-rewrite-repeated-app-autorewrite

6

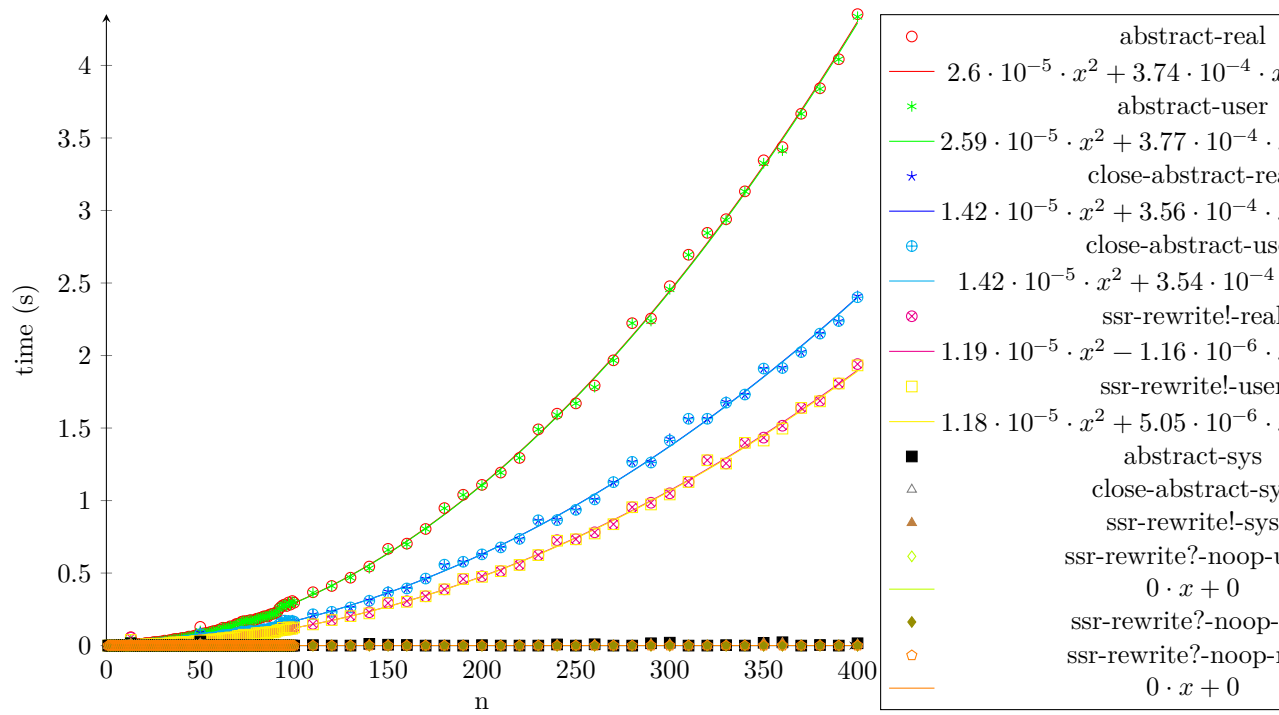Figure 7: timing-rewrite-repeated-app-autorewrite-noop

7

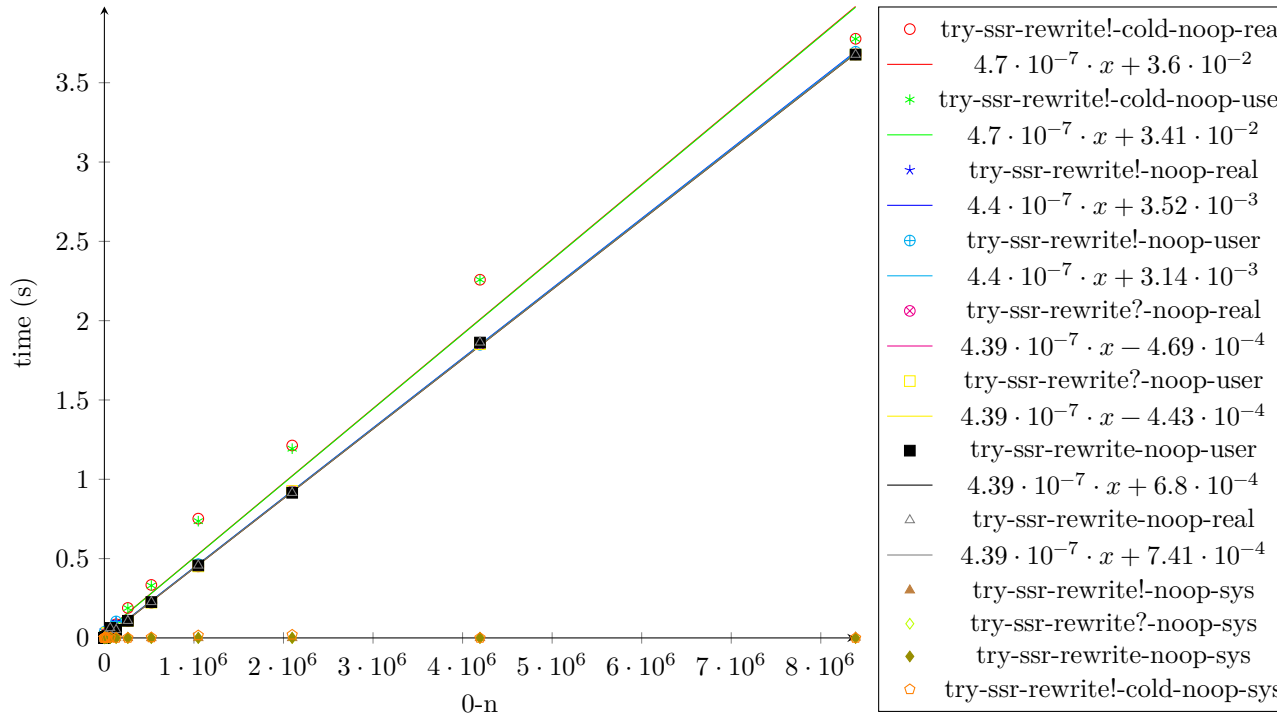Figure 8: timing-rewrite-repeated-app-ssrrewrite

8

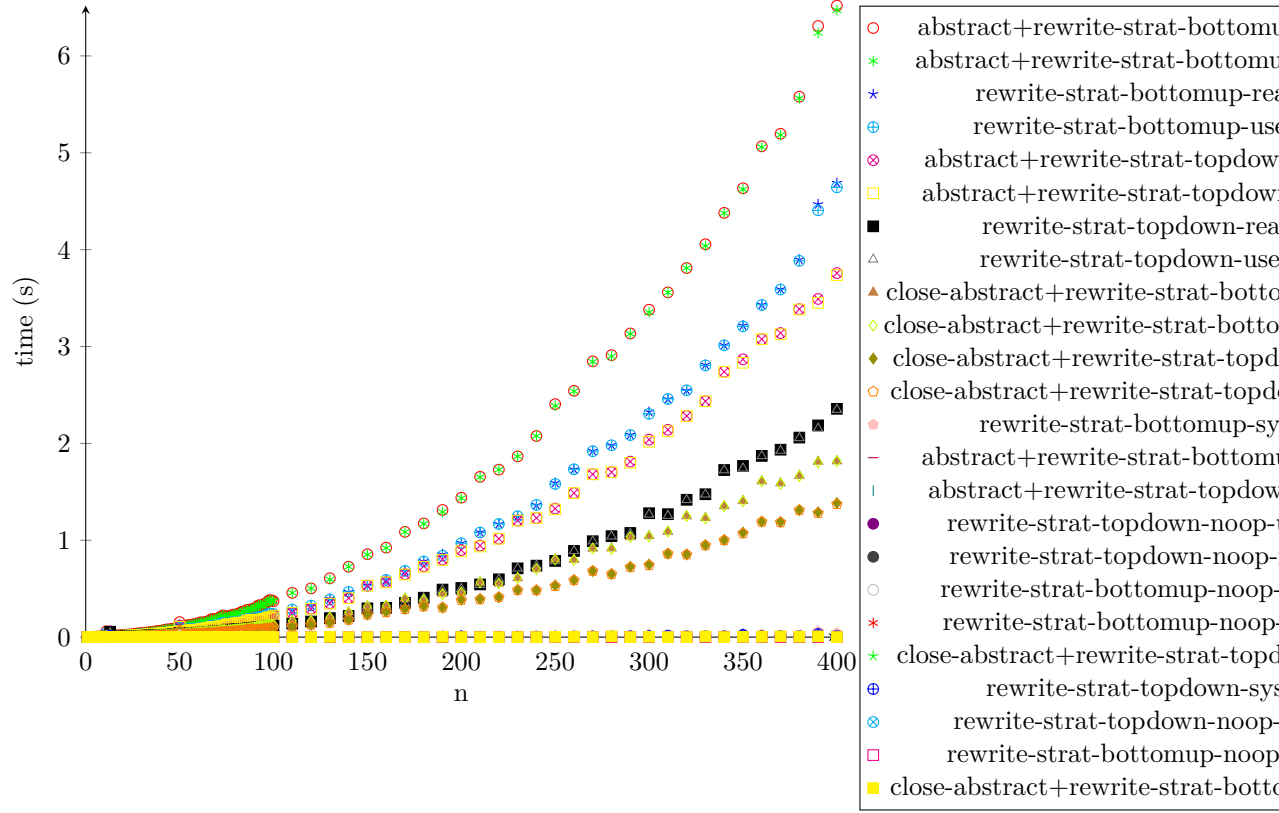Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn 1

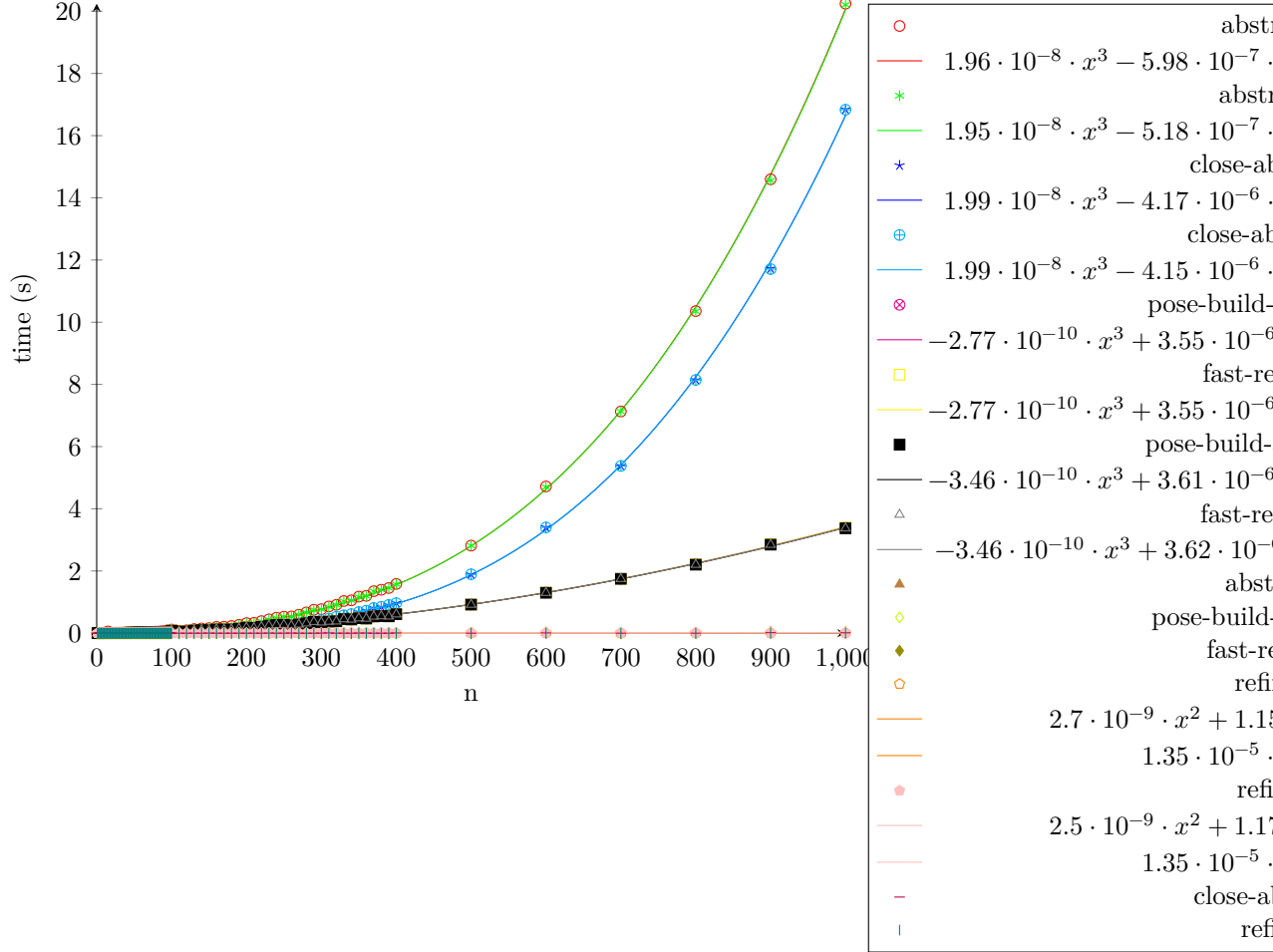Figure 10: timing-rewrite-repeated-app-rewrite-strat

The legend entries (partially cut off) read:

- abstract+rewrite-strat-bottomu...
- abstract+rewrite-strat-bottomu...
- rewrite-strat-bottomup-rea...
- rewrite-strat-bottomup-use...
- abstract+rewrite-strat-topdow...
- abstract+rewrite-strat-topdow...
- rewrite-strat-topdown-rea...
- rewrite-strat-topdown-use...
- close-abstract+rewrite-strat-botto...
- close-abstract+rewrite-strat-botto...
- close-abstract+rewrite-strat-topd...
- close-abstract+rewrite-strat-topd...
- rewrite-strat-bottomup-sy...
- abstract+rewrite-strat-bottomu...
- abstract+rewrite-strat-topdow...
- rewrite-strat-topdown-noop-...
- rewrite-strat-topdown-noop-...
- rewrite-strat-bottomup-noop-...
- rewrite-strat-bottomup-noop-...
- close-abstract+rewrite-strat-topd...
- rewrite-strat-topdown-sys...
- rewrite-strat-topdown-noop-...
- rewrite-strat-bottomup-noop...
- close-abstract+rewrite-strat-botto...

10

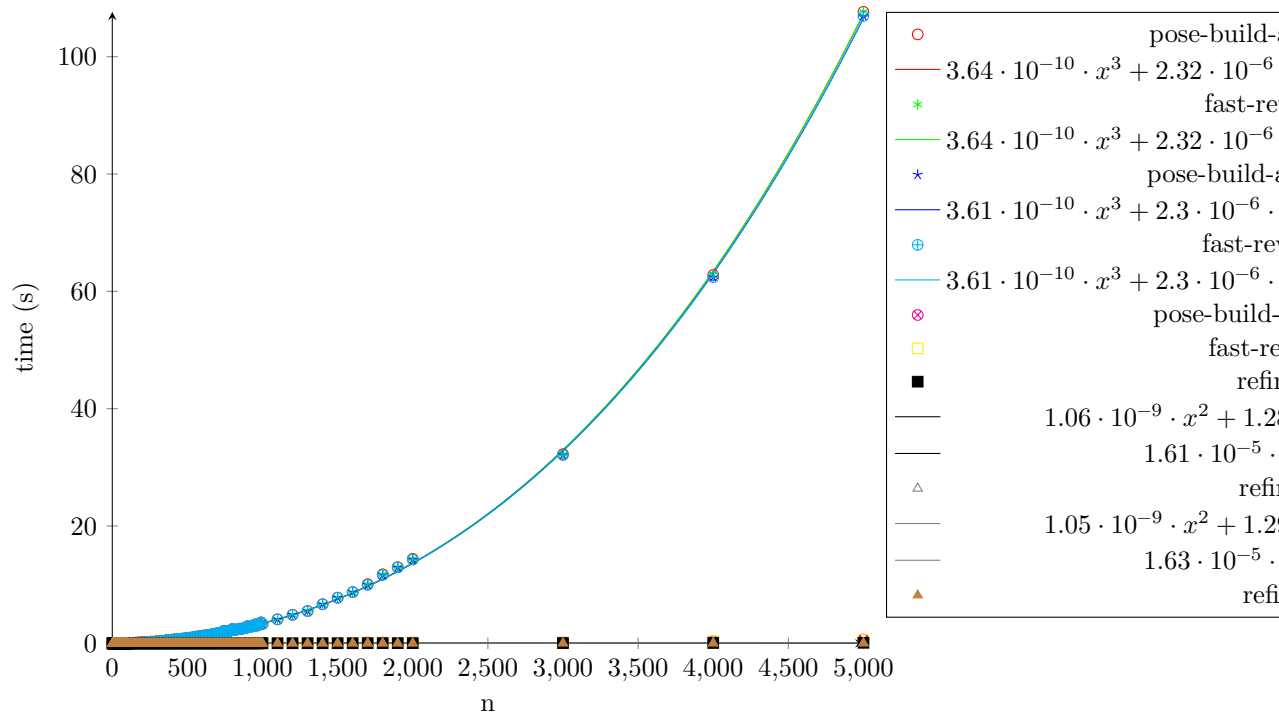Figure 11: timing-rewrite-repeated-app-fast-rewrite

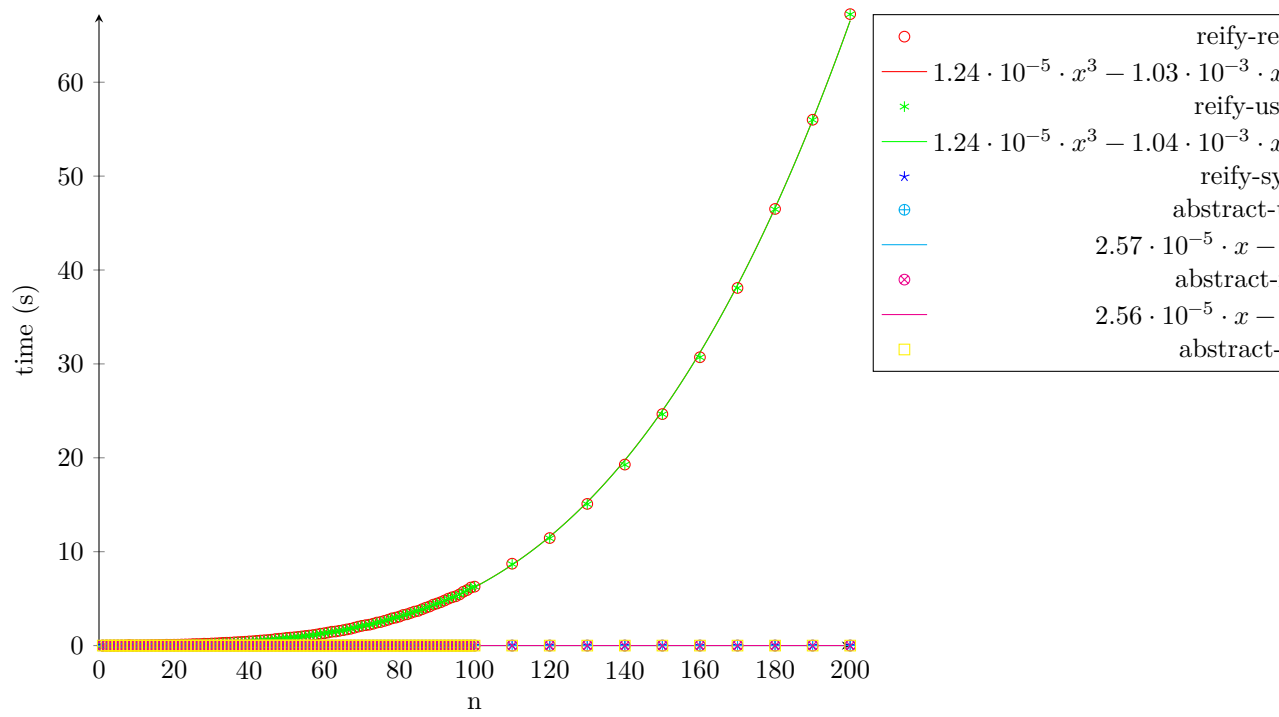Figure 12: timing-rewrite-repeated-app-fast-rewrite-no-abstract
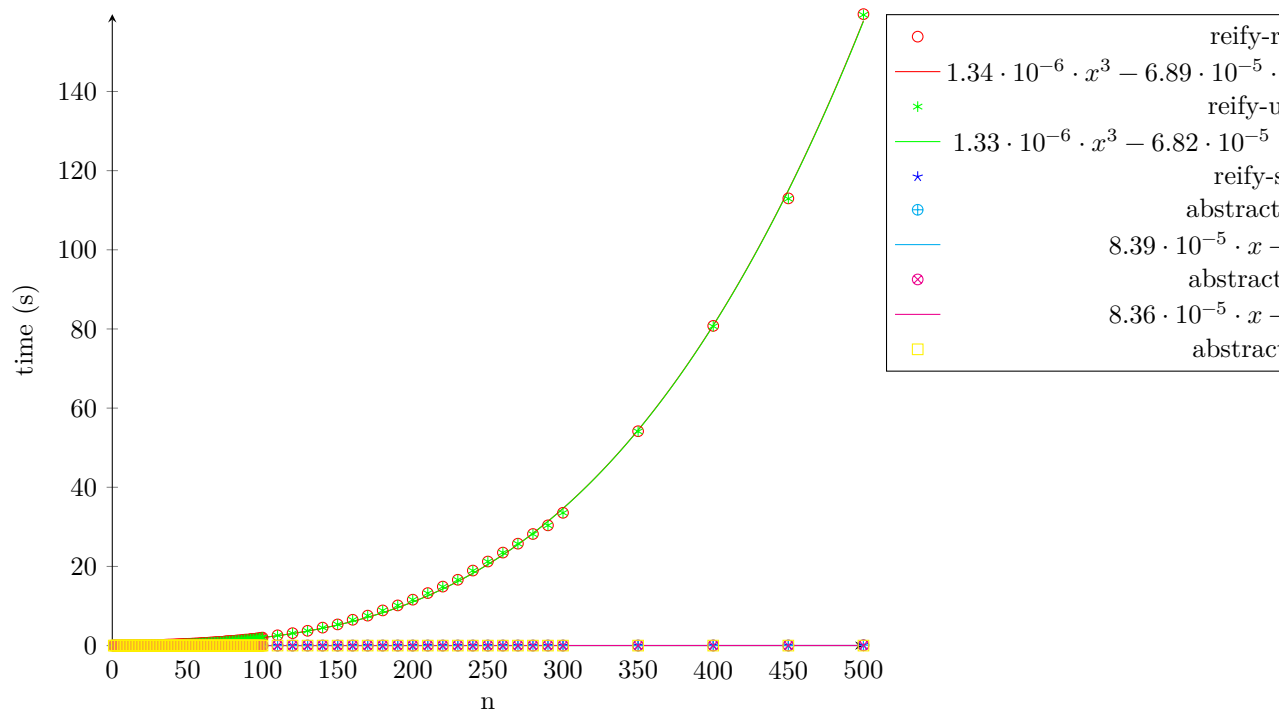
Figure 13: timing-typeclass-reification-let-in-HOAS

Figure 14: timing-typeclass-reification-let-in-PHOAS