Figure 1: timing-pattern

1
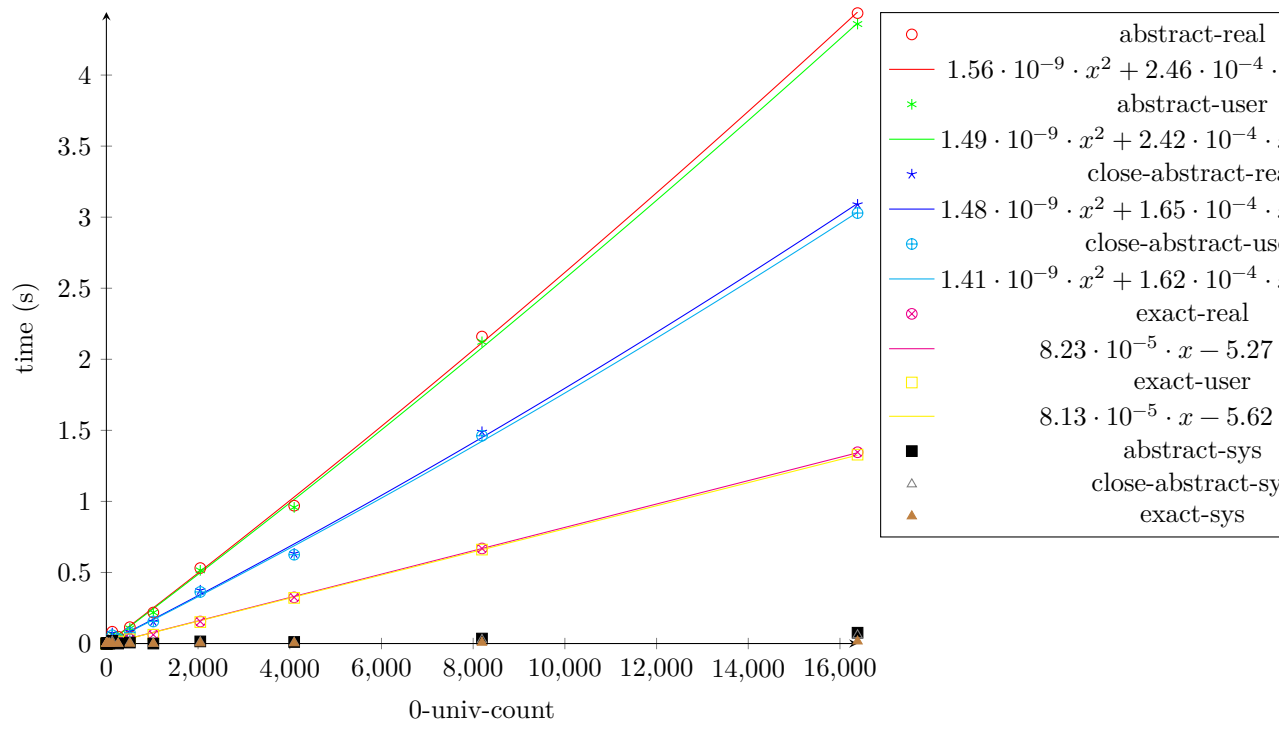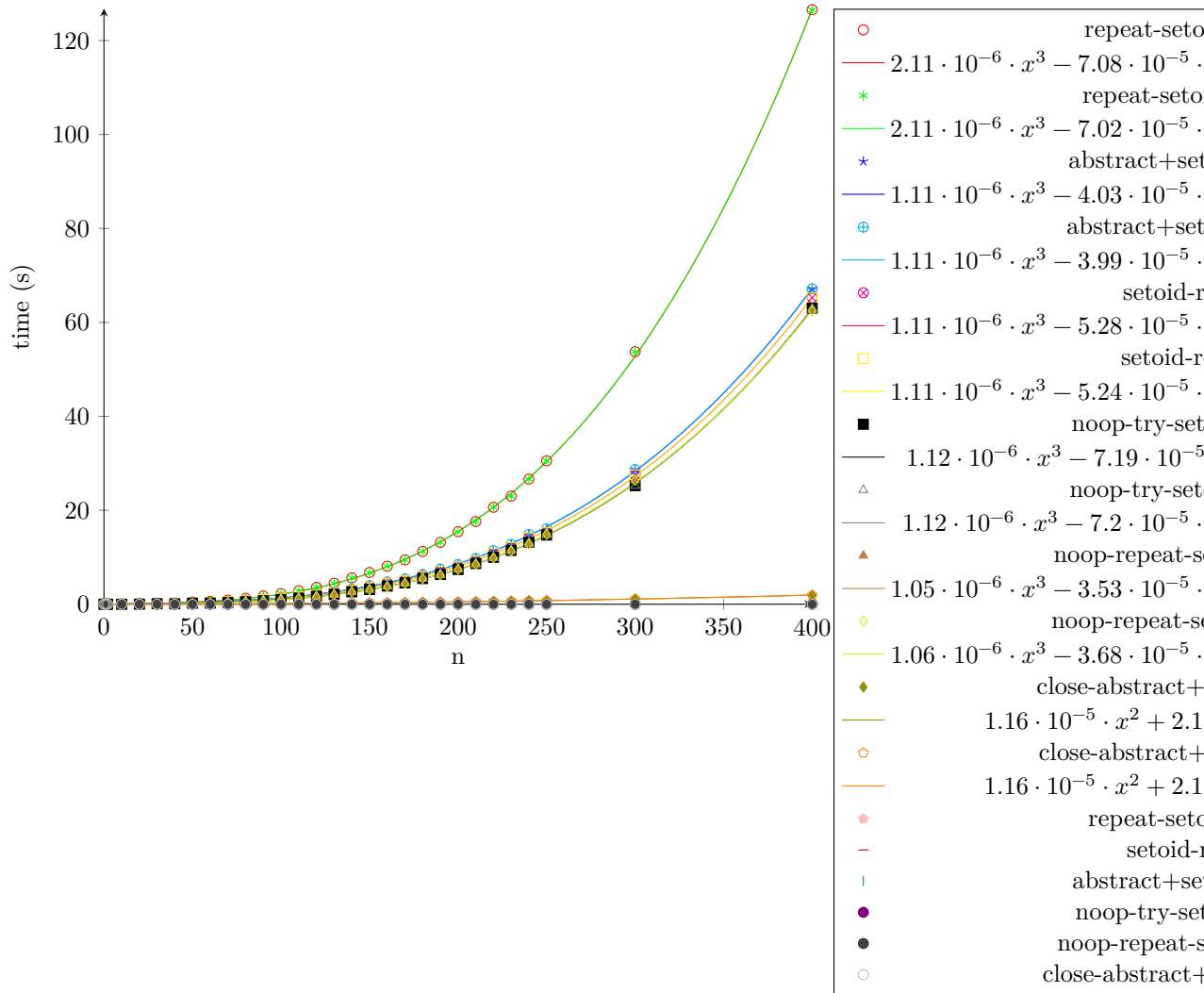
Figure 2: timing-n-polymorphic-universes param-1-n 0
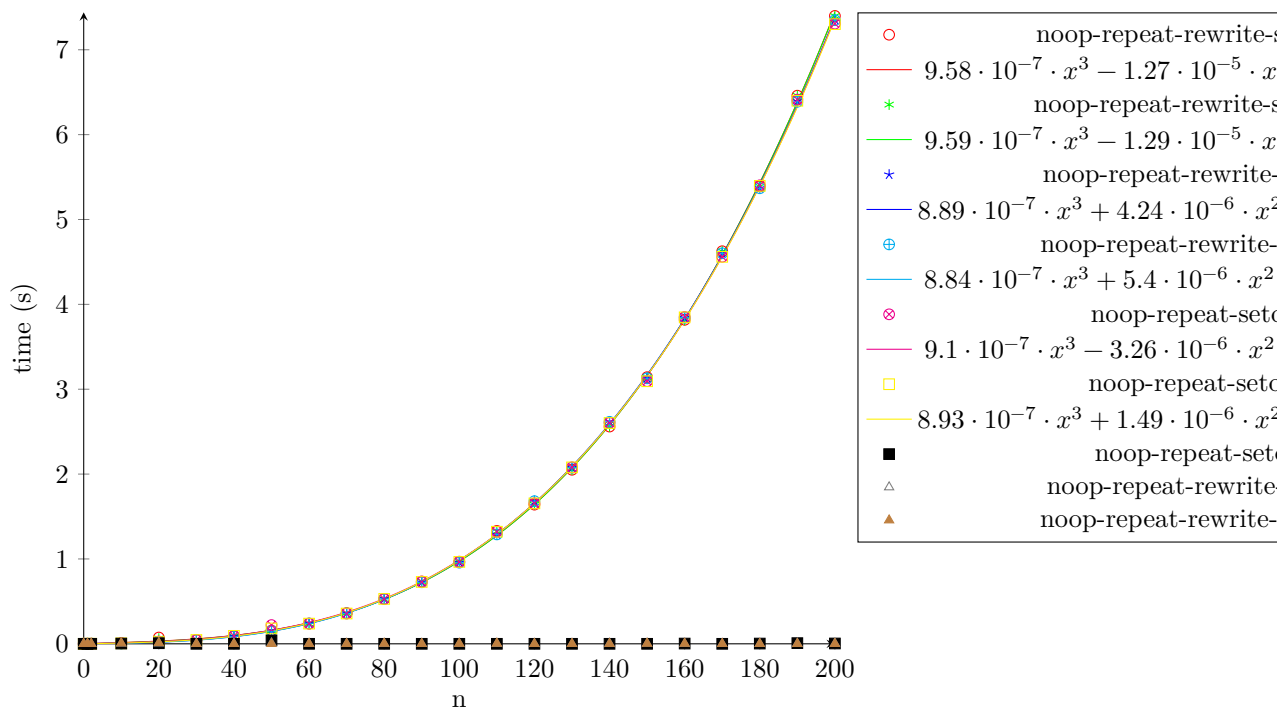
Figure 3: timing-repeat-setoid-rewrite-under-binders

Figure 4: timing-repeat-setoid-rewrite-under-binders-noop
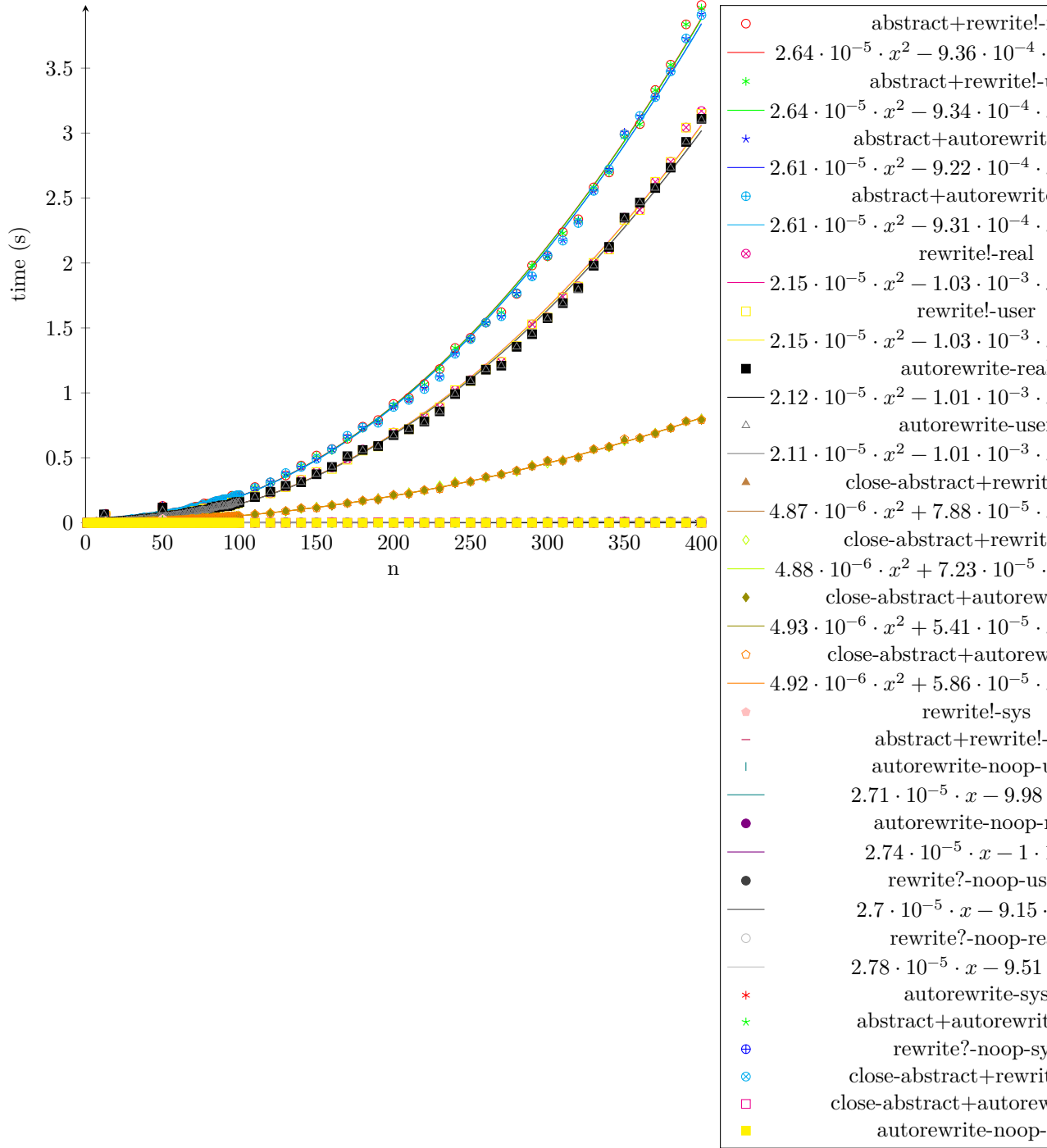
Figure 5: timing-rewrite-strat-under-binders

The figure's legend contains the following entries:

- abstract+rewrite!-
- $2.64 \cdot 10^{-5} \cdot x^2 - 9.36 \cdot 10^{-4} \cdot$
- abstract+rewrite!-u
- $2.64 \cdot 10^{-5} \cdot x^2 - 9.34 \cdot 10^{-4} \cdot$
- abstract+autorewrite
- $2.61 \cdot 10^{-5} \cdot x^2 - 9.22 \cdot 10^{-4} \cdot$
- abstract+autorewrite
- $2.61 \cdot 10^{-5} \cdot x^2 - 9.31 \cdot 10^{-4} \cdot$
- rewrite!-real
- $2.15 \cdot 10^{-5} \cdot x^2 - 1.03 \cdot 10^{-3} \cdot$
- rewrite!-user
- $2.15 \cdot 10^{-5} \cdot x^2 - 1.03 \cdot 10^{-3} \cdot$
- autorewrite-rea
- $2.12 \cdot 10^{-5} \cdot x^2 - 1.01 \cdot 10^{-3} \cdot$
- autorewrite-use
- $2.11 \cdot 10^{-5} \cdot x^2 - 1.01 \cdot 10^{-3} \cdot$
- close-abstract+rewrit
- $4.87 \cdot 10^{-6} \cdot x^2 + 7.88 \cdot 10^{-5} \cdot$
- close-abstract+rewrit
- $4.88 \cdot 10^{-6} \cdot x^2 + 7.23 \cdot 10^{-5} \cdot$
- close-abstract+autorew
- $4.93 \cdot 10^{-6} \cdot x^2 + 5.41 \cdot 10^{-5} \cdot$
- close-abstract+autorew
- $4.92 \cdot 10^{-6} \cdot x^2 + 5.86 \cdot 10^{-5} \cdot$
- rewrite!-sys
- abstract+rewrite!-
- autorewrite-noop-u
- $2.71 \cdot 10^{-5} \cdot x - 9.98$
- autorewrite-noop-r
- $2.74 \cdot 10^{-5} \cdot x - 1 \cdot$
- rewrite?-noop-us
- $2.7 \cdot 10^{-5} \cdot x - 9.15 \cdot$
- rewrite?-noop-re
- $2.78 \cdot 10^{-5} \cdot x - 9.51$
- autorewrite-sys
- abstract+autorewrit
- rewrite?-noop-sy
- close-abstract+rewrit
- close-abstract+autorew
- autorewrite-noop-

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

6

time (s)

4

3

2

1

0

0   1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 10,000

n

try-rewrite?-noop-re
$4.19 \cdot 10^{-8} \cdot x^2 + 4.76 \cdot 10^{-5} \cdot x$
try-rewrite?-noop-us
$4.19 \cdot 10^{-8} \cdot x^2 + 4.73 \cdot 10^{-5} \cdot x$
autorewrite-noop-rea
$4.11 \cdot 10^{-8} \cdot x^2 + 5.47 \cdot 10^{-5} \cdot x$
try-rewrite!-noop-rea
$4.17 \cdot 10^{-8} \cdot x^2 + 4.99 \cdot 10^{-5} \cdot x$
try-rewrite-noop-rea
$4.15 \cdot 10^{-8} \cdot x^2 + 5.08 \cdot 10^{-5} \cdot x$
autorewrite-noop-use
$4.11 \cdot 10^{-8} \cdot x^2 + 5.46 \cdot 10^{-5} \cdot x$
try-rewrite-noop-use
$4.15 \cdot 10^{-8} \cdot x^2 + 5.09 \cdot 10^{-5} \cdot x$
try-rewrite!-noop-use
$4.16 \cdot 10^{-8} \cdot x^2 + 4.98 \cdot 10^{-5} \cdot x$
try-ssr-rewrite?-noop-u
$4.99 \cdot 10^{-7} \cdot x - 2.23 \cdot 1$
try-ssr-rewrite?-noop-r
$5 \cdot 10^{-7} \cdot x - 2.21 \cdot 10$
try-ssr-rewrite-noop-u
$4.86 \cdot 10^{-7} \cdot x - 1.97 \cdot 1$
try-ssr-rewrite-noop-r
$4.92 \cdot 10^{-7} \cdot x - 2.26 \cdot 1$
try-ssr-rewrite!-noop-u
$5.26 \cdot 10^{-7} \cdot x - 7.98 \cdot 1$
try-ssr-rewrite!-noop-r
$5.26 \cdot 10^{-7} \cdot x - 6.26 \cdot 1$
try-rewrite!-noop-sy
autorewrite-noop-sy
try-ssr-rewrite?-noop-
try-ssr-rewrite-noop-s
try-ssr-rewrite!-noop-
try-rewrite?-noop-sy
try-rewrite-noop-sy

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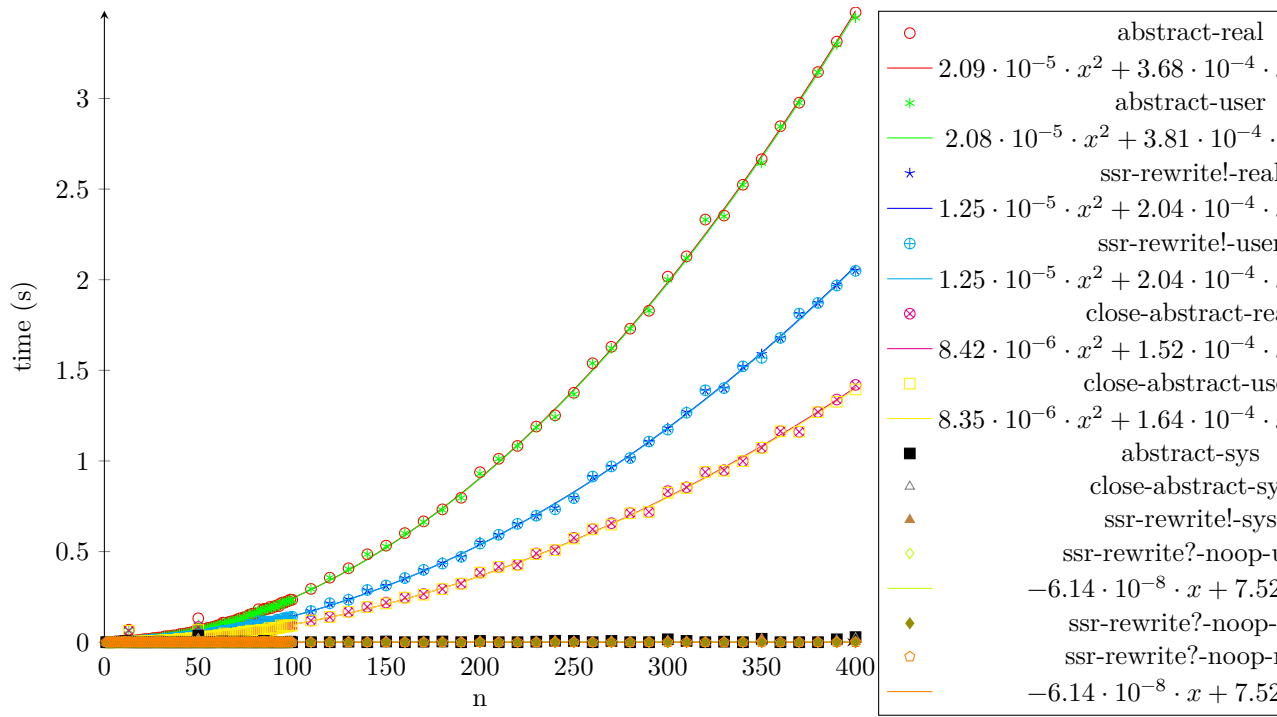
7

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

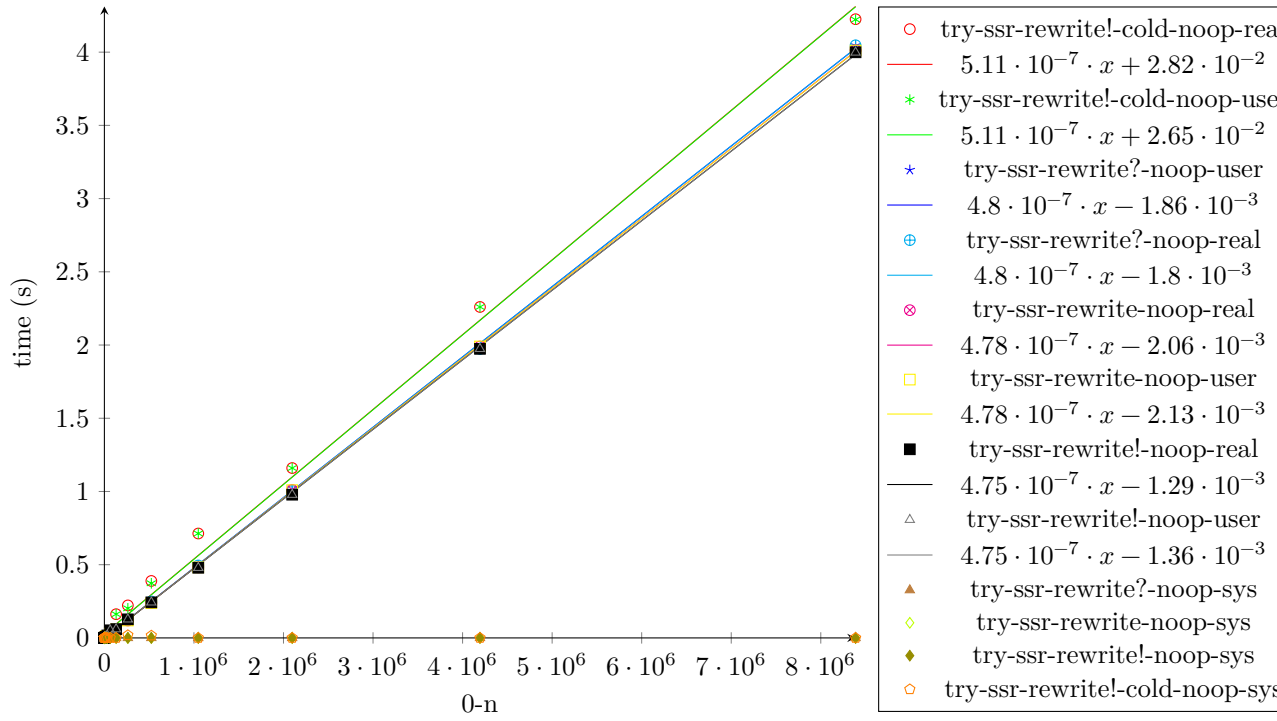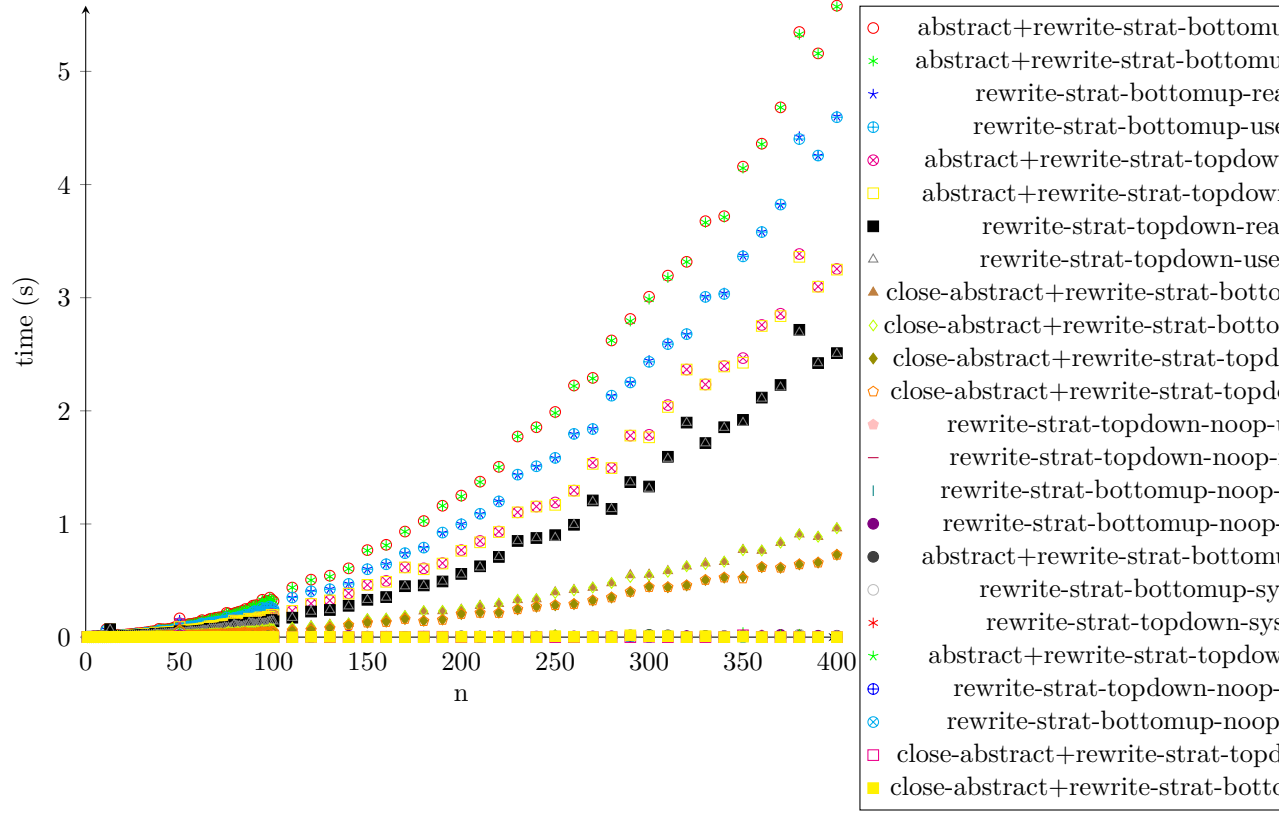Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn 1

9

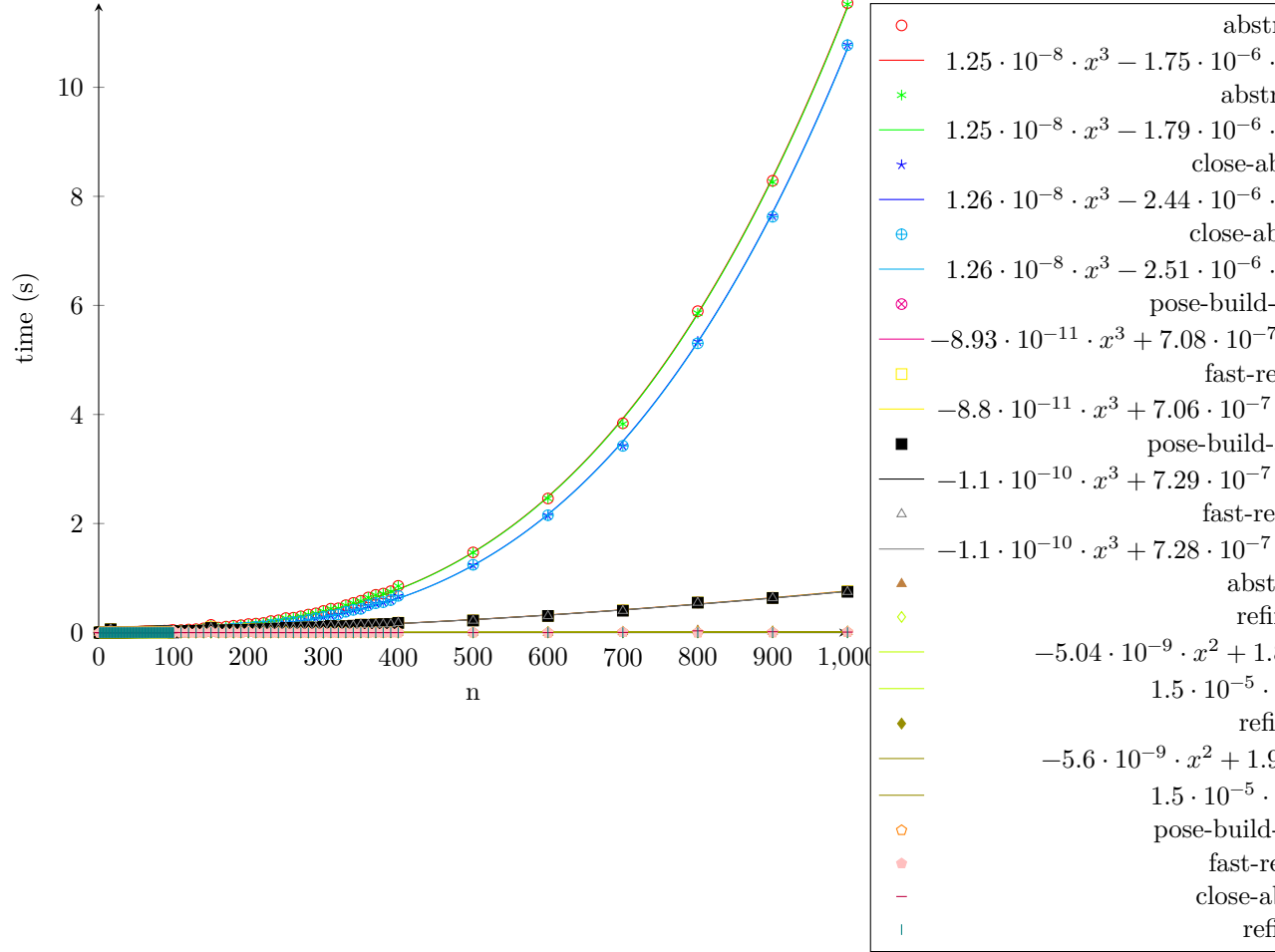Figure 10: timing-rewrite-repeated-app-rewrite-strat

The figure shows a scatter plot with the following axes and legend entries:

- x-axis: n (0 to 400)
- y-axis: time (s) (0 to 5)

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

10

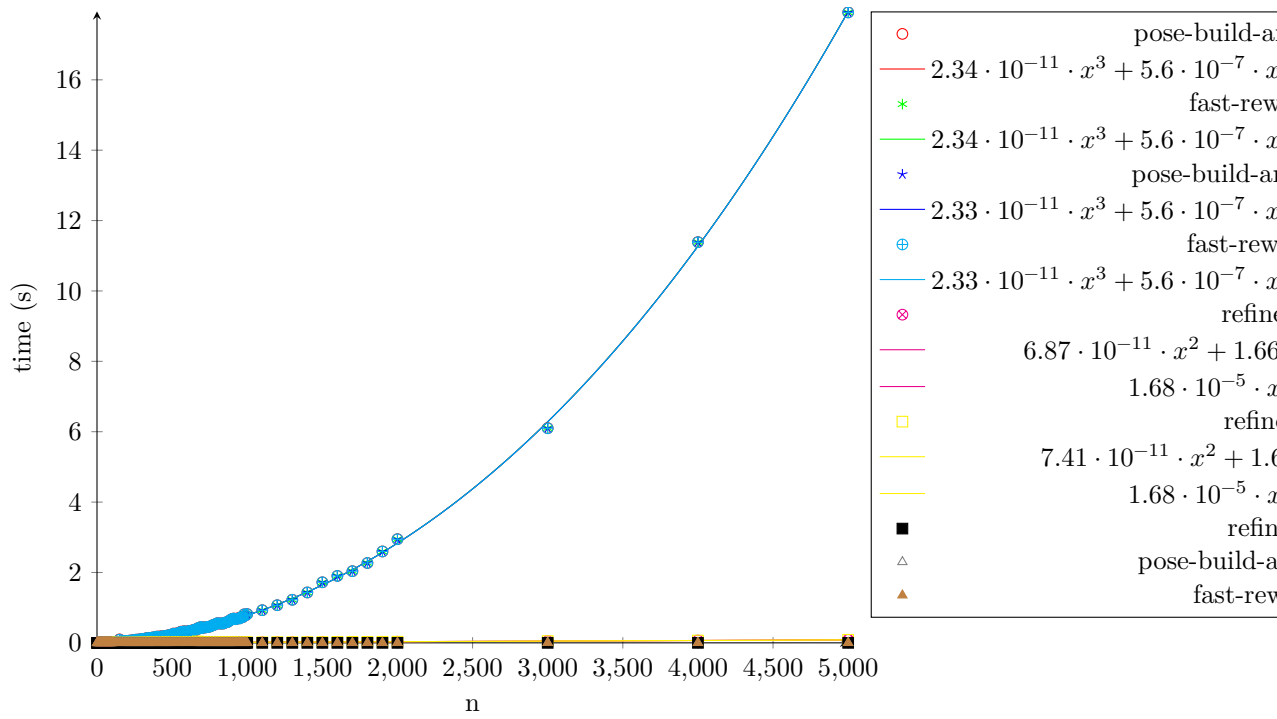Figure 11: timing-rewrite-repeated-app-fast-rewrite

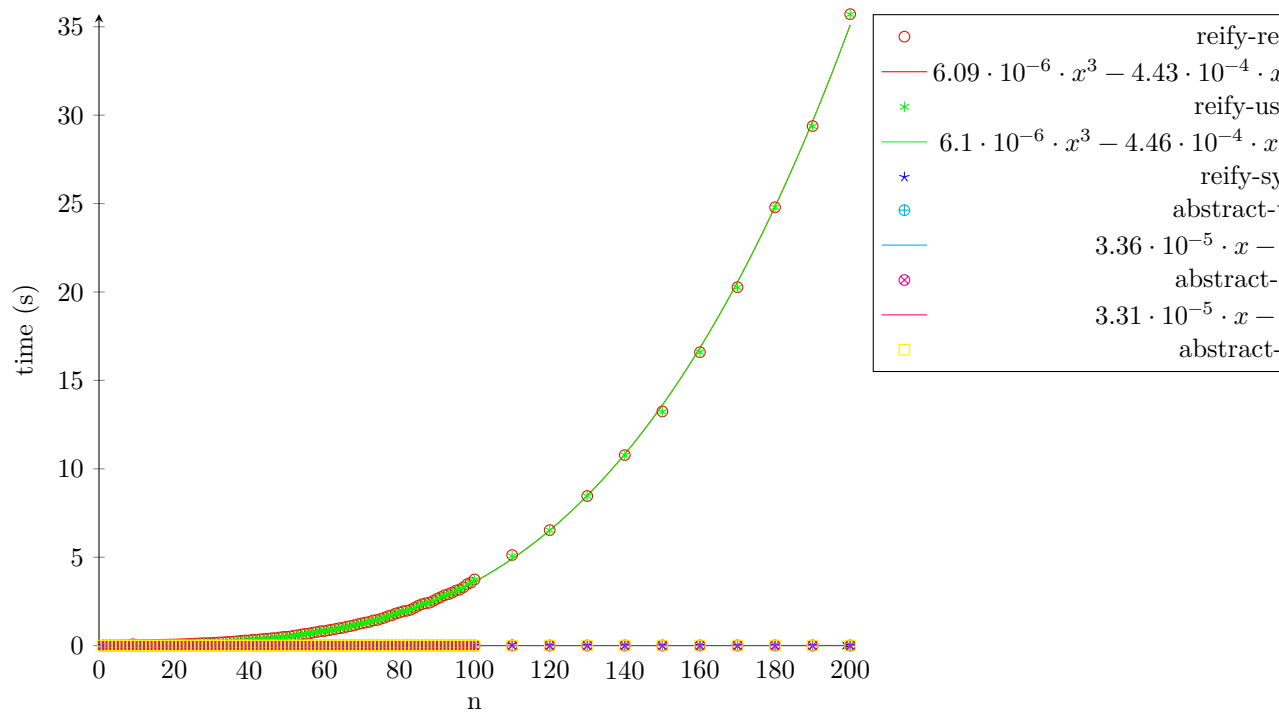Figure 12: timing-rewrite-repeated-app-fast-rewrite-no-abstract
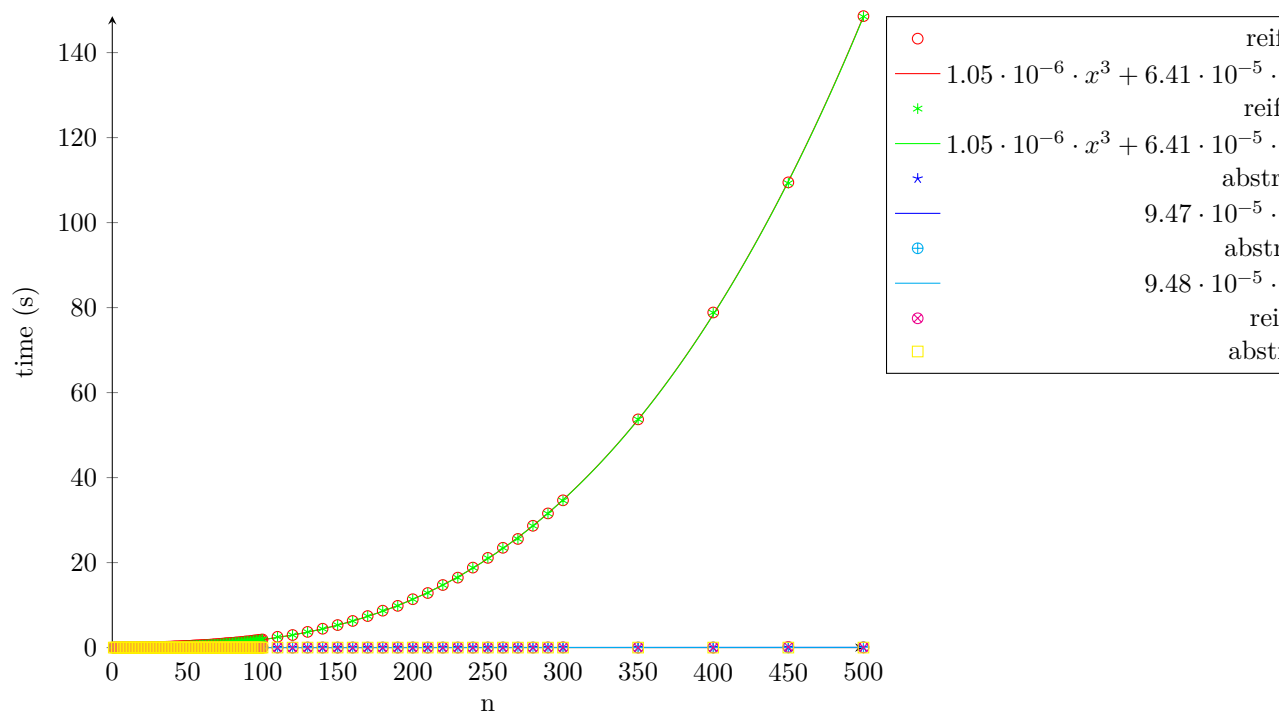
Figure 13: timing-typeclass-reification-let-in-HOAS

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