Figure 1: timing-pattern

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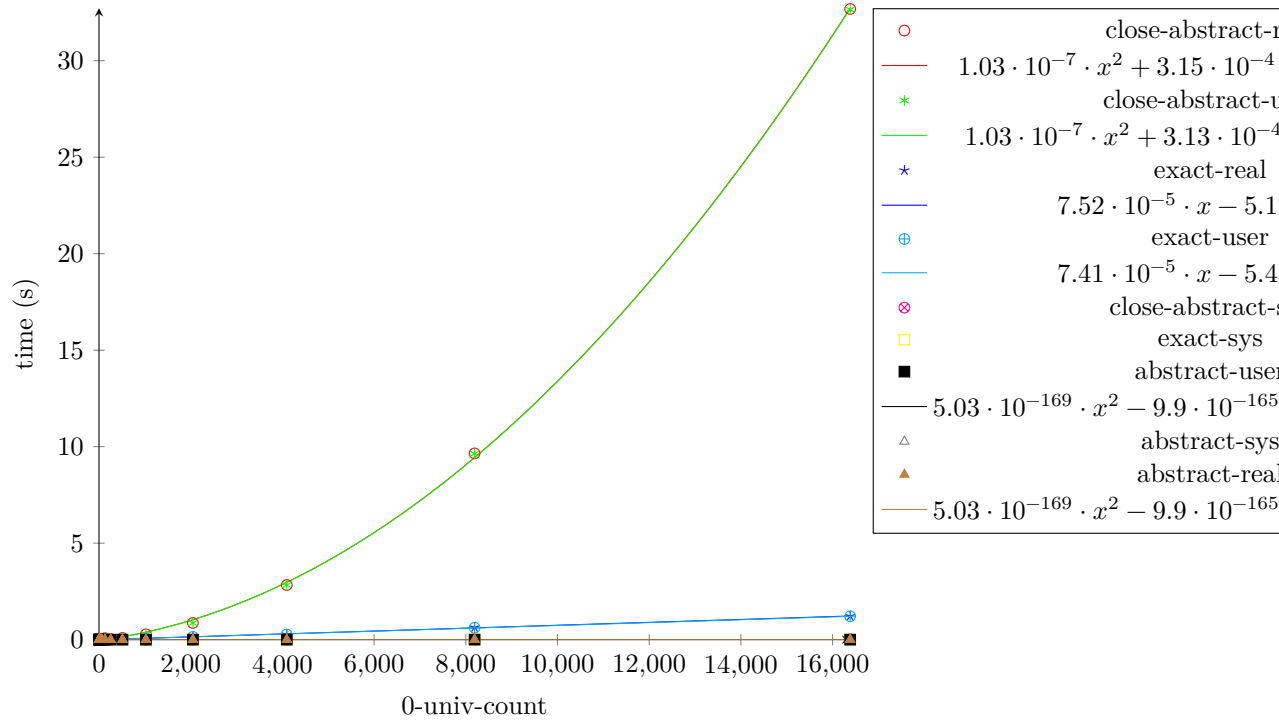
Figure 2: timing-n-polymorphic-universes param-1-n 0
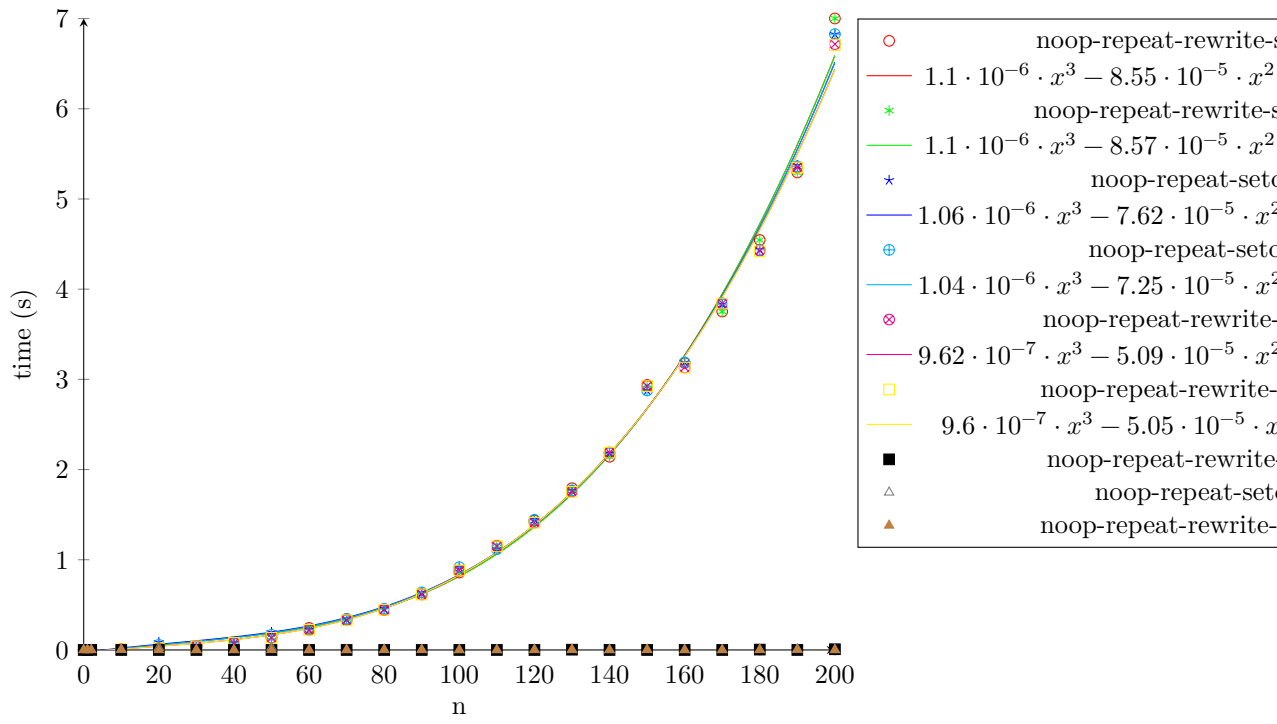
Figure 3: timing-repeat-setoid-rewrite-under-binders

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

The figure legend contains the following entries:

- noop-repeat-rewrite-s
- $1.1 \cdot 10^{-6} \cdot x^3 - 8.55 \cdot 10^{-5} \cdot x^2$
- noop-repeat-rewrite-s
- $1.1 \cdot 10^{-6} \cdot x^3 - 8.57 \cdot 10^{-5} \cdot x^2$
- noop-repeat-set
- $1.06 \cdot 10^{-6} \cdot x^3 - 7.62 \cdot 10^{-5} \cdot x^2$
- noop-repeat-set
- $1.04 \cdot 10^{-6} \cdot x^3 - 7.25 \cdot 10^{-5} \cdot x^2$
- noop-repeat-rewrite-
- $9.62 \cdot 10^{-7} \cdot x^3 - 5.09 \cdot 10^{-5} \cdot x^2$
- noop-repeat-rewrite-
- $9.6 \cdot 10^{-7} \cdot x^3 - 5.05 \cdot 10^{-5} \cdot x$
- noop-repeat-rewrite-
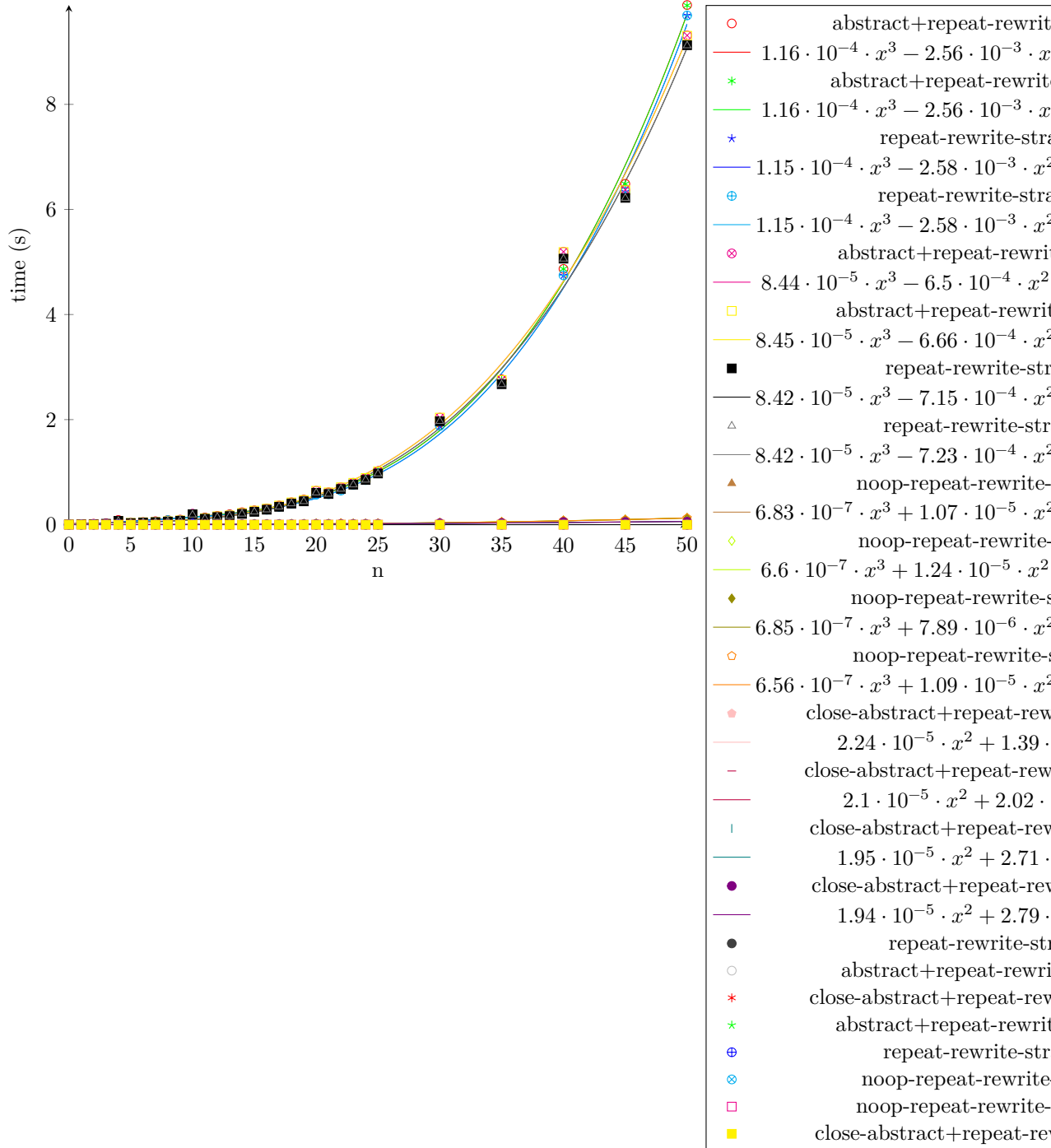- noop-repeat-set
- noop-repeat-rewrite-
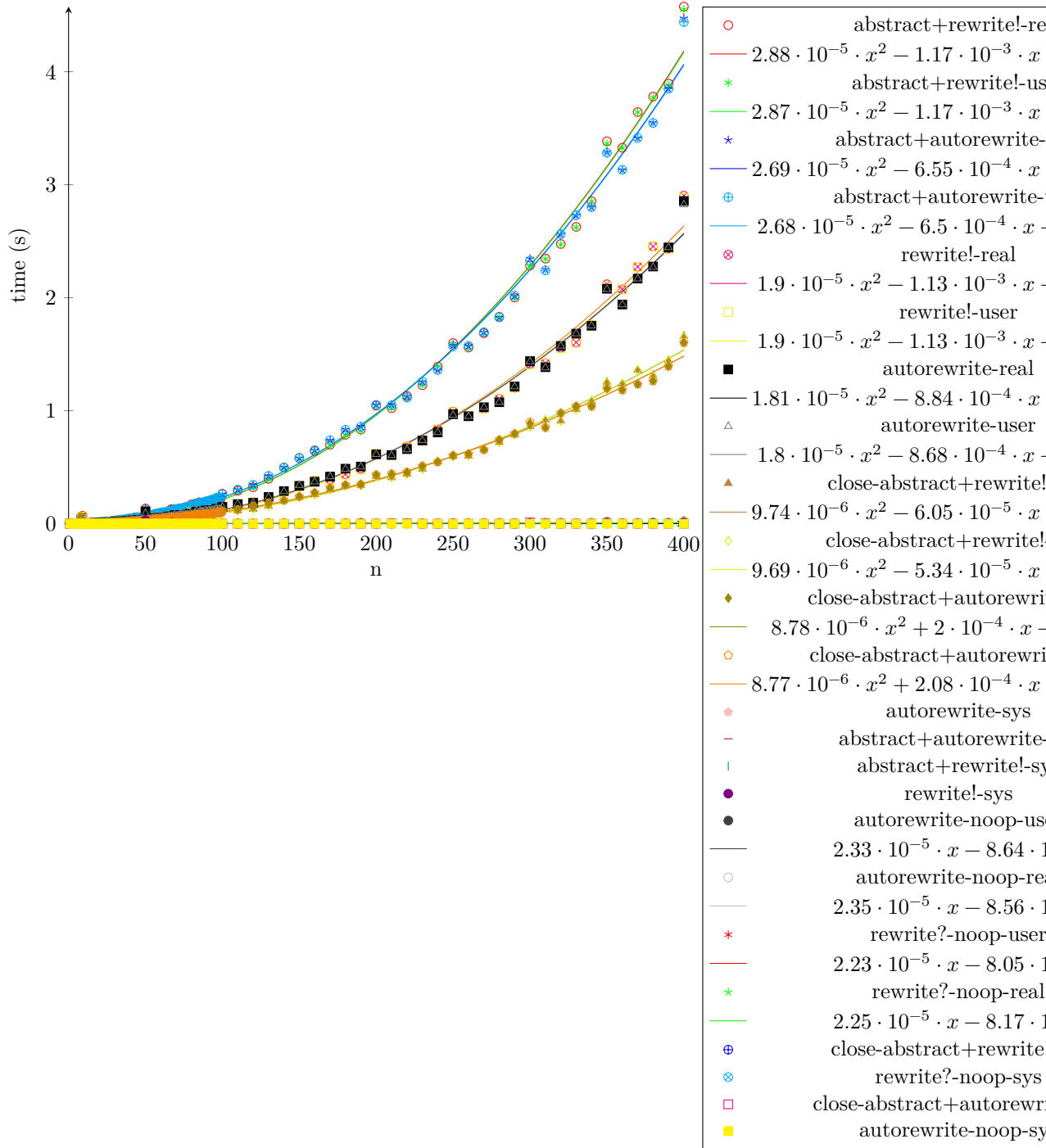
Figure 5: timing-rewrite-strat-under-binders

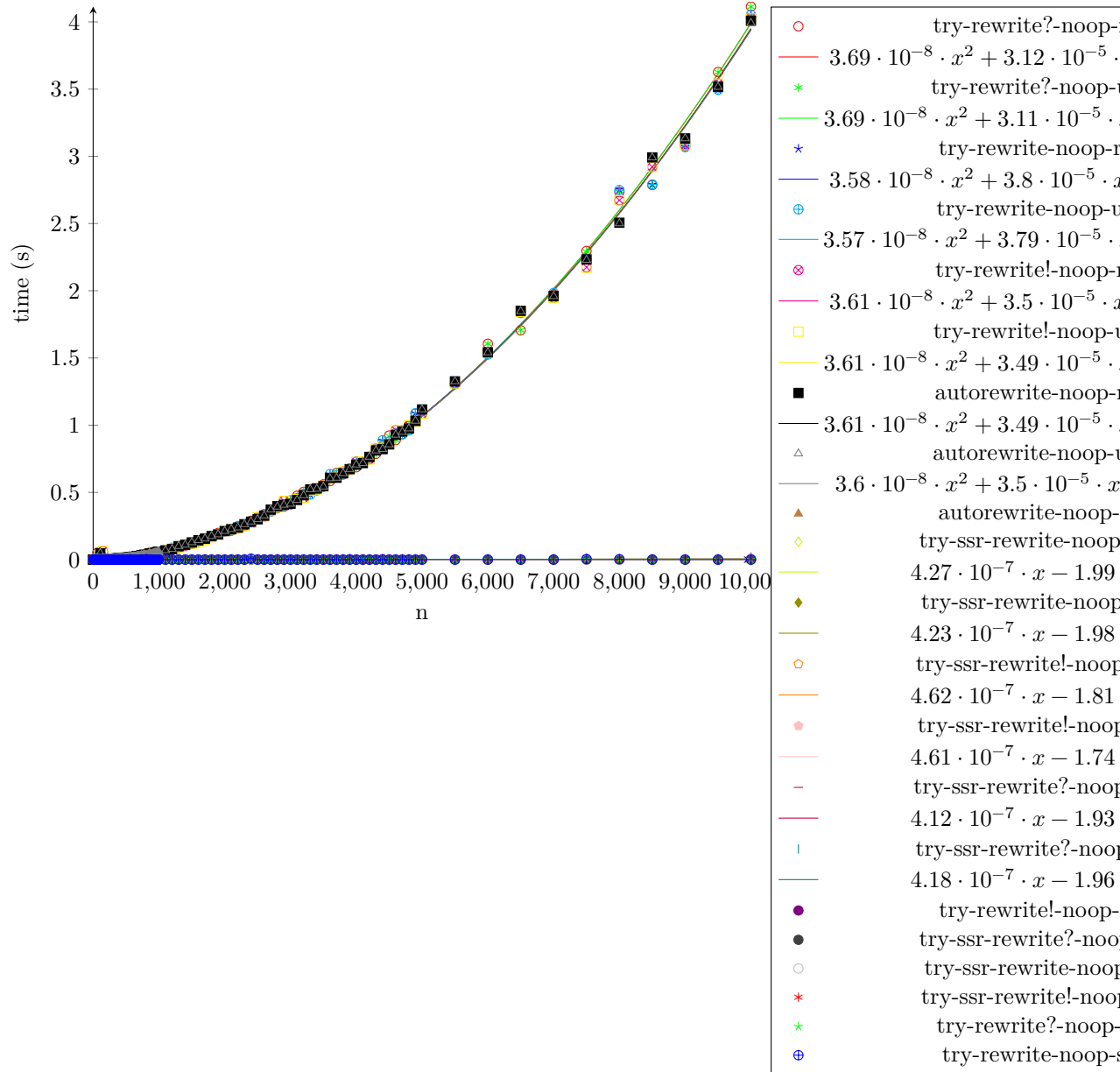Figure 6: timing-rewrite-repeated-app-autorewrite

6

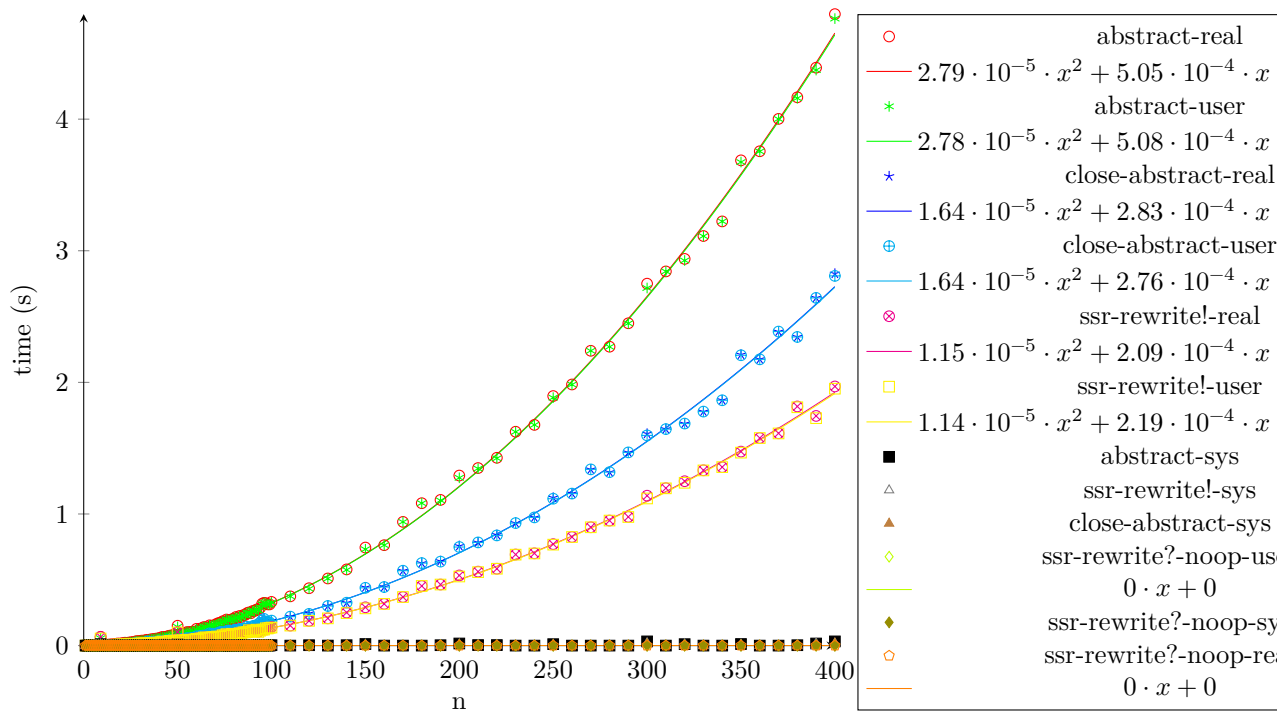Figure 7: timing-rewrite-repeated-app-autorewrite-noop

Figure 8: timing-rewrite-repeated-app-ssrrewrite
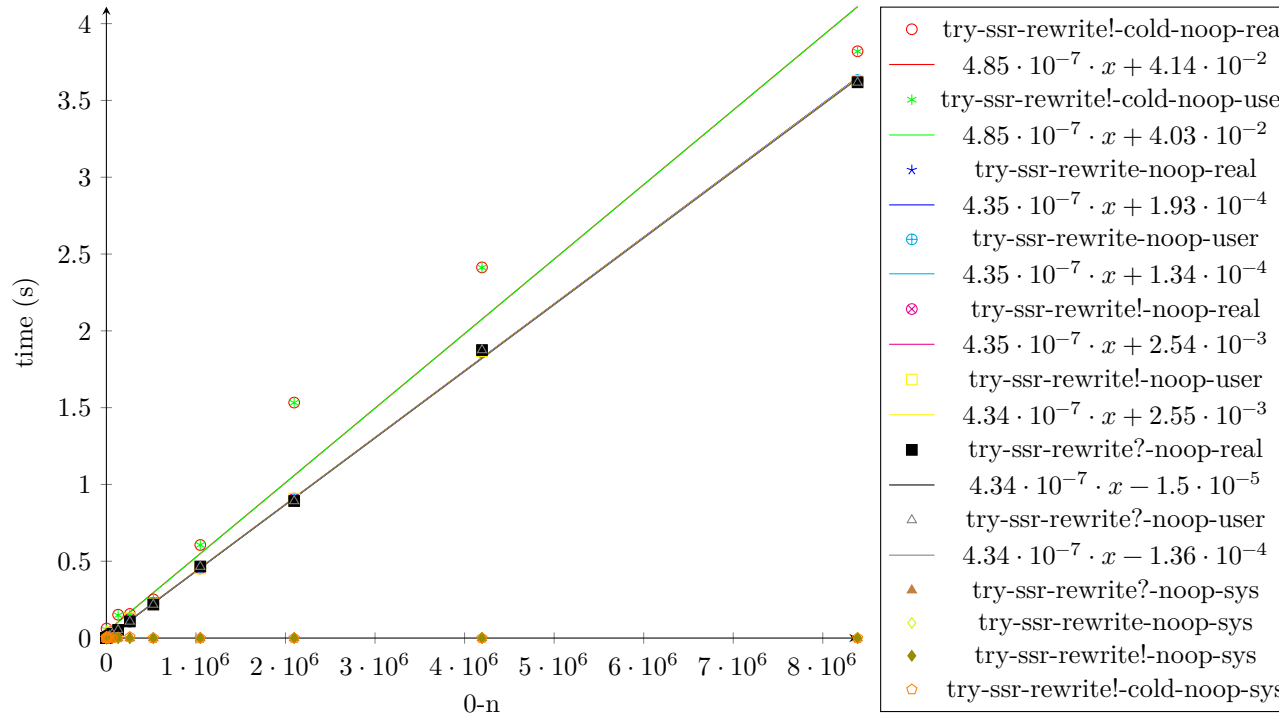
Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn 1

The legend of the figure contains the following entries:

- try-ssr-rewrite!-cold-noop-real
- $4.85 \cdot 10^{-7} \cdot x + 4.14 \cdot 10^{-2}$
- try-ssr-rewrite!-cold-noop-user
- $4.85 \cdot 10^{-7} \cdot x + 4.03 \cdot 10^{-2}$
- try-ssr-rewrite-noop-real
- $4.35 \cdot 10^{-7} \cdot x + 1.93 \cdot 10^{-4}$
- try-ssr-rewrite-noop-user
- $4.35 \cdot 10^{-7} \cdot x + 1.34 \cdot 10^{-4}$
- try-ssr-rewrite!-noop-real
- $4.35 \cdot 10^{-7} \cdot x + 2.54 \cdot 10^{-3}$
- try-ssr-rewrite!-noop-user
- $4.34 \cdot 10^{-7} \cdot x + 2.55 \cdot 10^{-3}$
- try-ssr-rewrite?-noop-real
- $4.34 \cdot 10^{-7} \cdot x - 1.5 \cdot 10^{-5}$
- try-ssr-rewrite?-noop-user
- $4.34 \cdot 10^{-7} \cdot x - 1.36 \cdot 10^{-4}$
- try-ssr-rewrite?-noop-sys
- try-ssr-rewrite-noop-sys
- try-ssr-rewrite!-noop-sys
- try-ssr-rewrite!-cold-noop-sys

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

The chart legend contains the following entries:

- 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...
- rewrite-strat-topdown-noop-...
- rewrite-strat-topdown-noop-...
- rewrite-strat-bottomup-noop-...
- rewrite-strat-bottomup-noop-...
- 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...

time (s)

10

8

6

4

2

0

0   100   200   300   400   500   600   700   800   900   1,000

n

○ abstr
— $1.04 \cdot 10^{-8} \cdot x^3 - 7.9 \cdot 10^{-7} \cdot$
* abstr
— $1.04 \cdot 10^{-8} \cdot x^3 - 8.37 \cdot 10^{-7} \cdot$
* close-ab
— $1.05 \cdot 10^{-8} \cdot x^3 - 1.68 \cdot 10^{-6} \cdot$
⊕ close-ab
— $1.05 \cdot 10^{-8} \cdot x^3 - 1.69 \cdot 10^{-6} \cdot$
⊗ pose-build-
— $-7.16 \cdot 10^{-11} \cdot x^3 + 8.67 \cdot 10^{-}$
□ pose-build-
— $-1.06 \cdot 10^{-10} \cdot x^3 + 9.07 \cdot 10^{-7}$
■ fast-re
— $-7.16 \cdot 10^{-11} \cdot x^3 + 8.67 \cdot 10^{-}$
△ fast-re
— $-1.06 \cdot 10^{-10} \cdot x^3 + 9.07 \cdot 10^{-7}$
▲ refi
— $1.31 \cdot 10^{-9} \cdot x^2 + 1.1$
— $1.26 \cdot 10^{-5} \cdot$
◇ refi
— $1.27 \cdot 10^{-9} \cdot x^2 + 1.1$
— $1.26 \cdot 10^{-5} \cdot$
◆ close-ab
⬠ abst
⬠ refi
— pose-build-
| fast-re

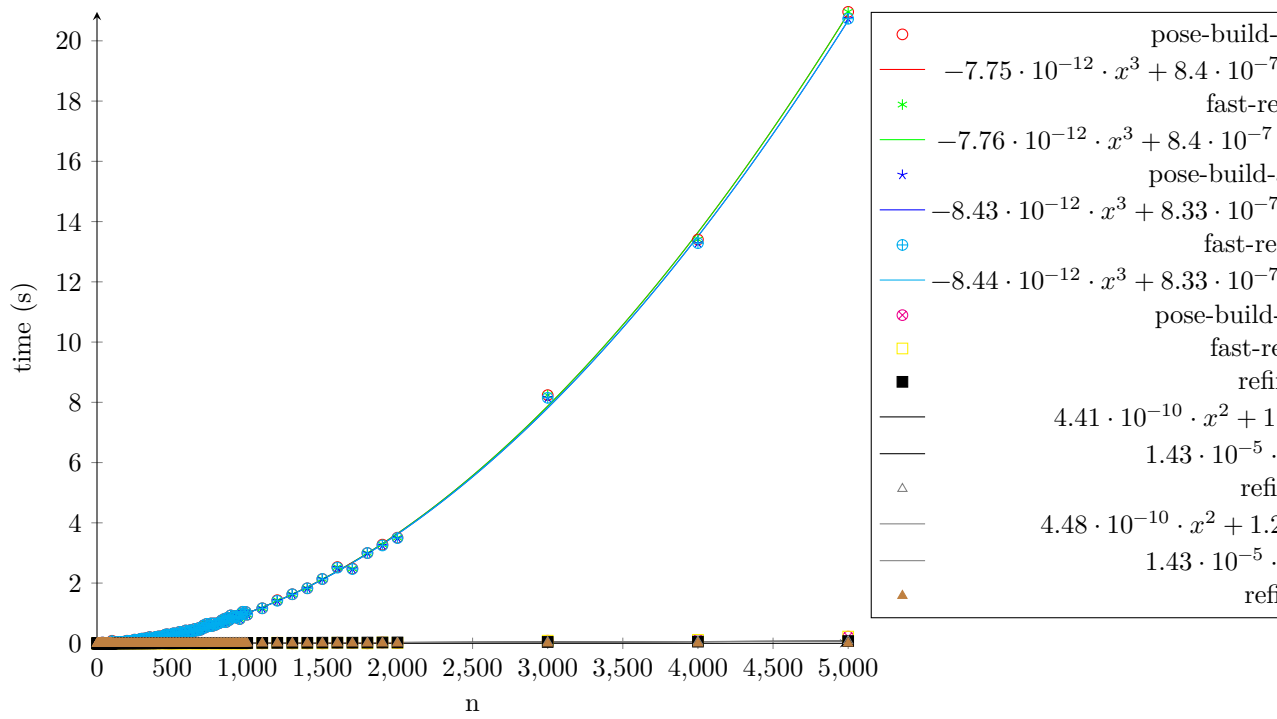Figure 11: timing-rewrite-repeated-app-fast-rewrite

11

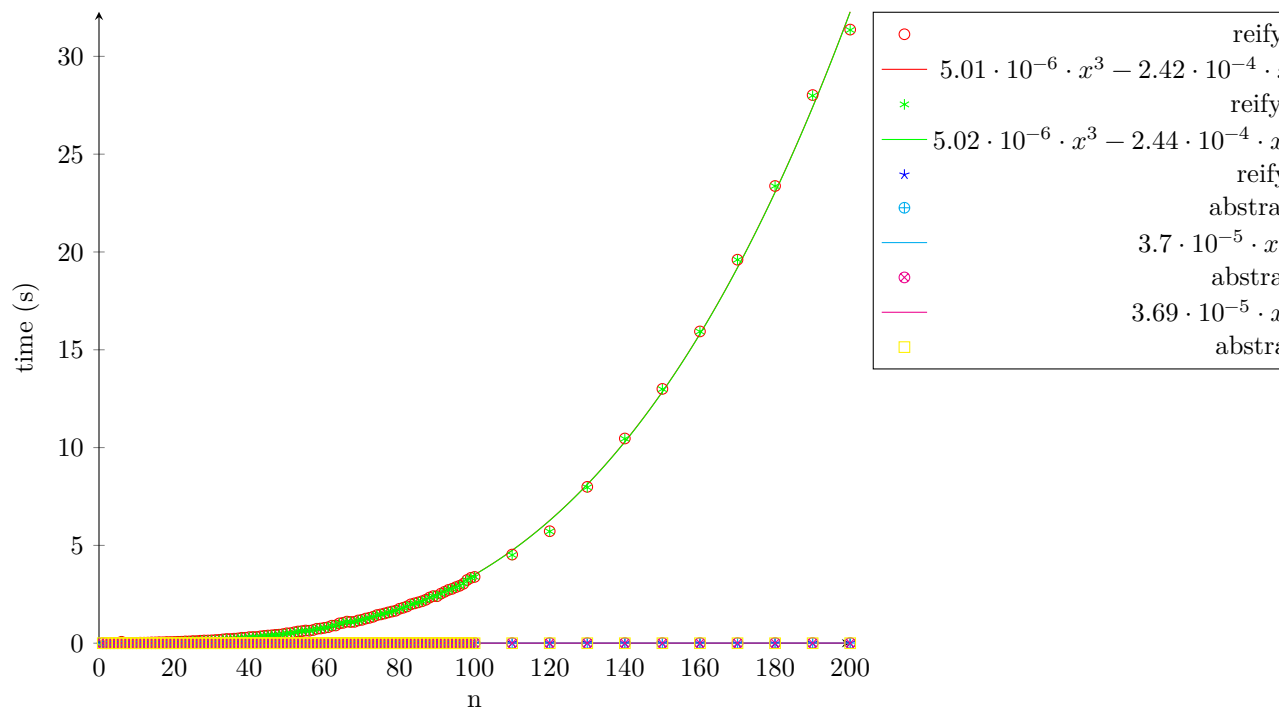Figure 12: timing-rewrite-repeated-app-fast-rewrite-no-abstract
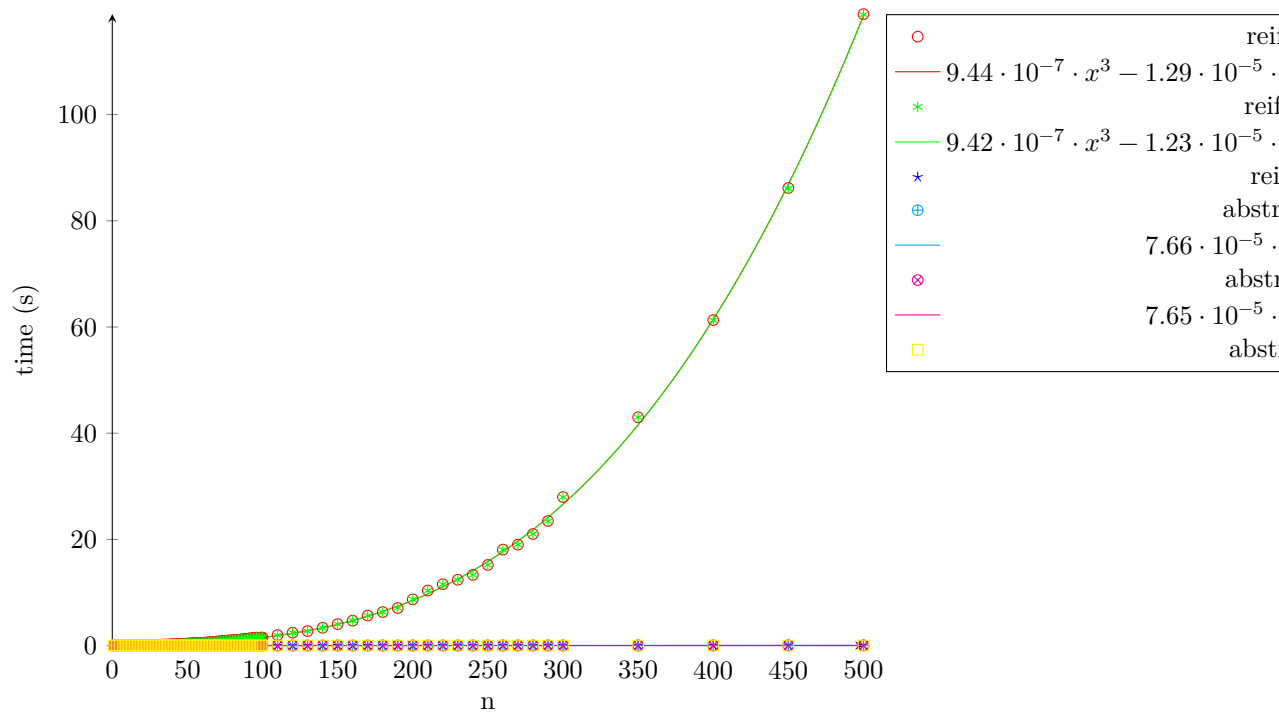
Figure 13: timing-typeclass-reification-let-in-HOAS

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