Figure 1: timing-pattern

1

Figure 2: timing-n-polymorphic-universes param-1-n 0
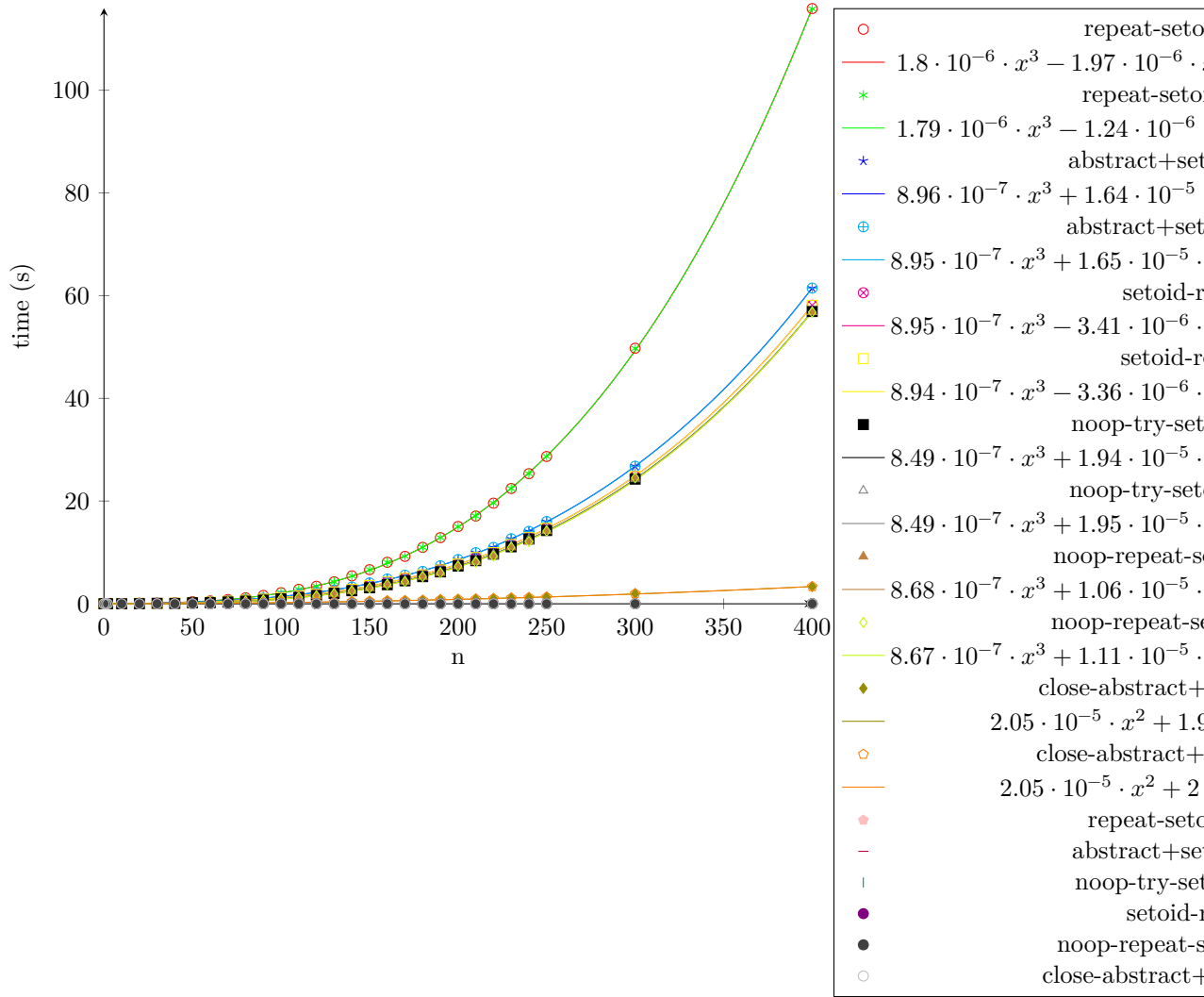
The figure contains a plot with axis labels "time (s)" (vertical) and "n" (horizontal), with a partially visible legend. The legend entries include:

- repeat-seto...
- $1.8 \cdot 10^{-6} \cdot x^3 - 1.97 \cdot 10^{-6} \cdot$
- repeat-seto...
- $1.79 \cdot 10^{-6} \cdot x^3 - 1.24 \cdot 10^{-6}$
- abstract+set...
- $8.96 \cdot 10^{-7} \cdot x^3 + 1.64 \cdot 10^{-5}$
- abstract+set...
- $8.95 \cdot 10^{-7} \cdot x^3 + 1.65 \cdot 10^{-5} \cdot$
- setoid-r...
- $8.95 \cdot 10^{-7} \cdot x^3 - 3.41 \cdot 10^{-6} \cdot$
- setoid-r...
- $8.94 \cdot 10^{-7} \cdot x^3 - 3.36 \cdot 10^{-6} \cdot$
- noop-try-set...
- $8.49 \cdot 10^{-7} \cdot x^3 + 1.94 \cdot 10^{-5} \cdot$
- noop-try-set...
- $8.49 \cdot 10^{-7} \cdot x^3 + 1.95 \cdot 10^{-5} \cdot$
- noop-repeat-se...
- $8.68 \cdot 10^{-7} \cdot x^3 + 1.06 \cdot 10^{-5} \cdot$
- noop-repeat-se...
- $8.67 \cdot 10^{-7} \cdot x^3 + 1.11 \cdot 10^{-5} \cdot$
- close-abstract+
- $2.05 \cdot 10^{-5} \cdot x^2 + 1.9$
- close-abstract+
- $2.05 \cdot 10^{-5} \cdot x^2 + 2$
- repeat-seto...
- abstract+se...
- noop-try-set...
- setoid-r...
- noop-repeat-s...
- close-abstract+

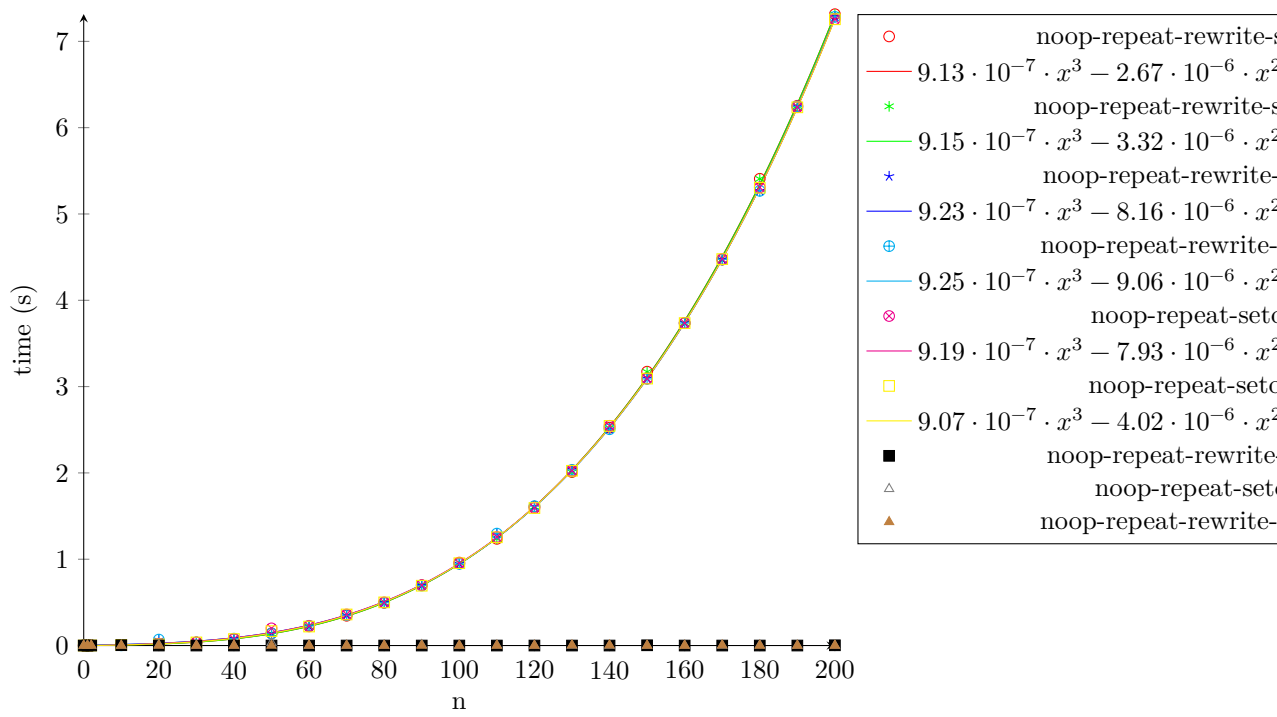Figure 3: timing-repeat-setoid-rewrite-under-binders

3

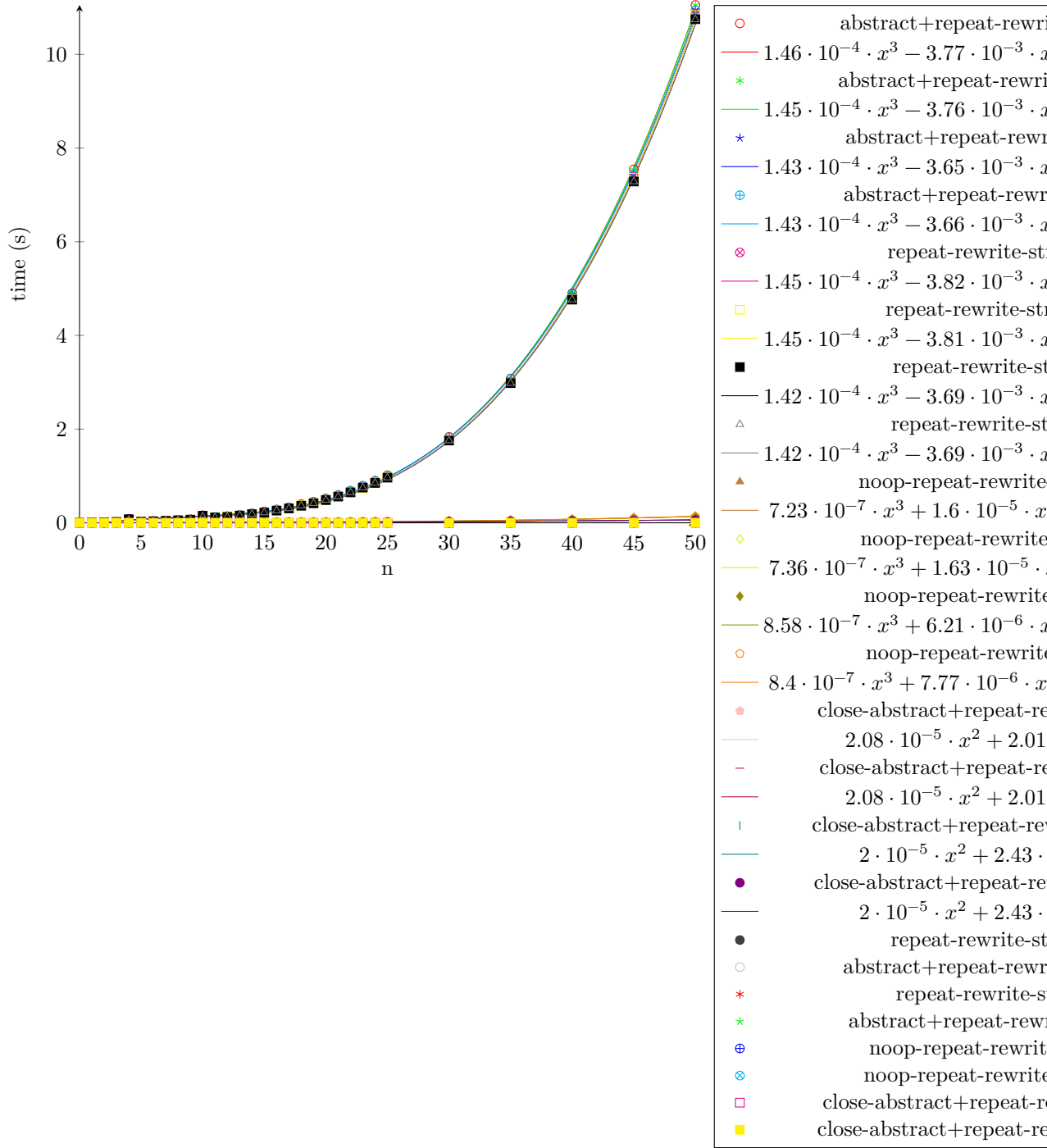Figure 4: timing-repeat-setoid-rewrite-under-binders-noop
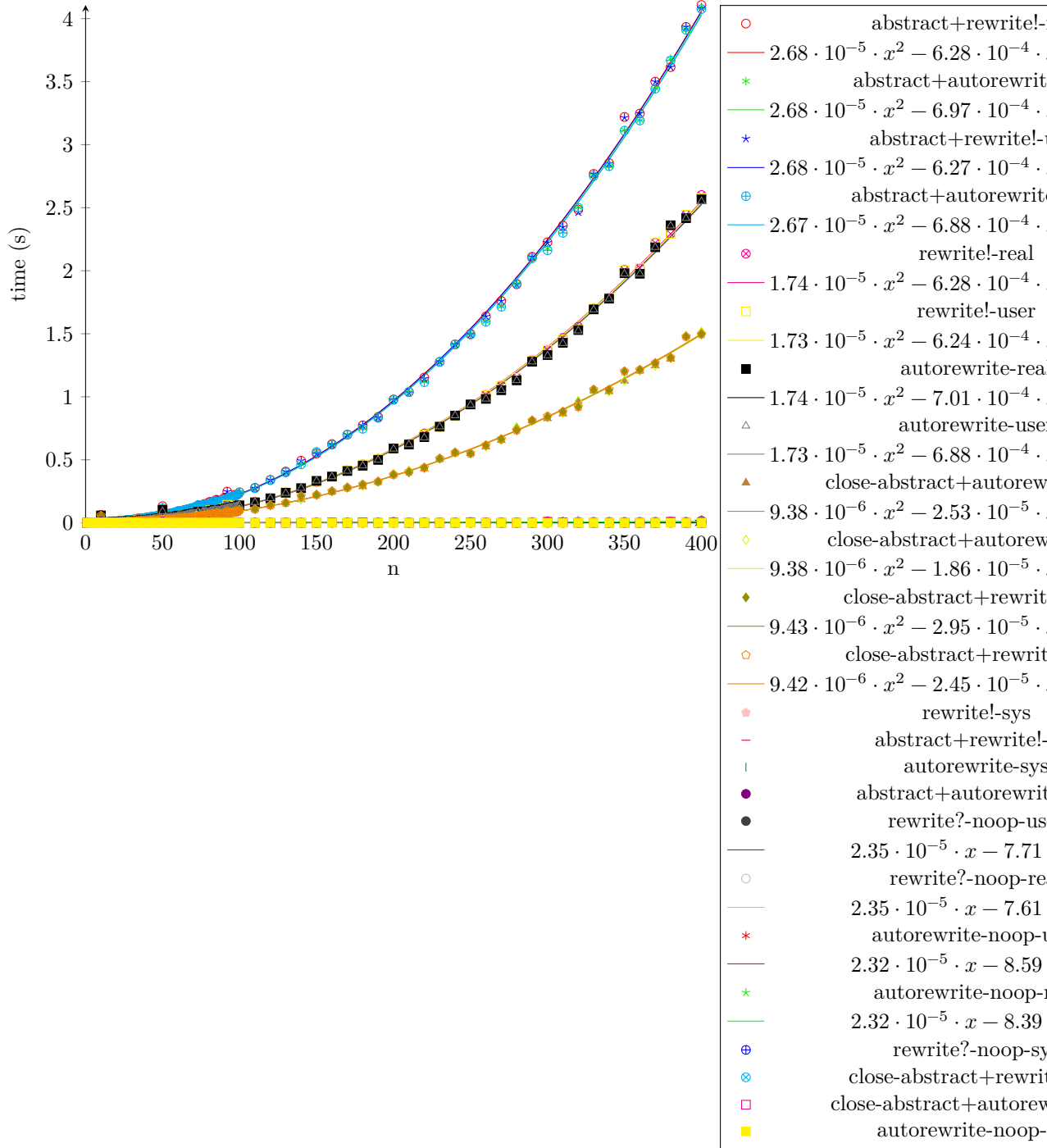
4

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

5

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

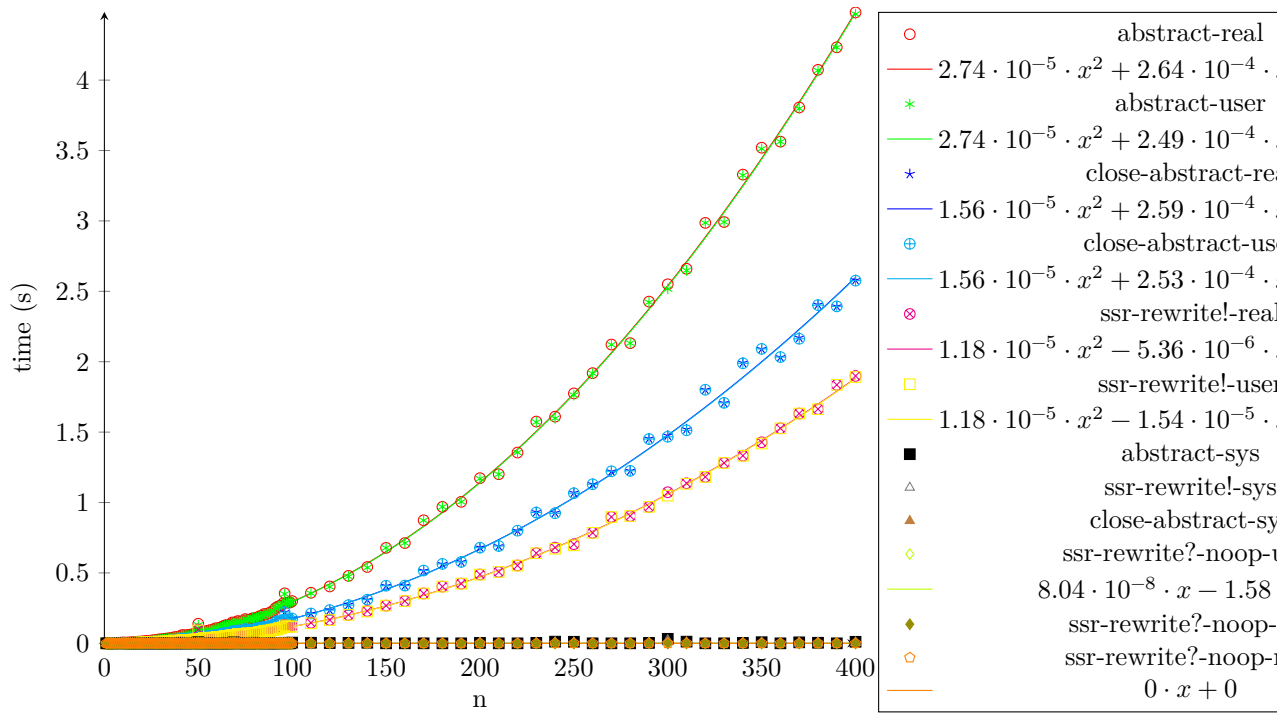Figure 7: timing-rewrite-repeated-app-autorewrite-noop

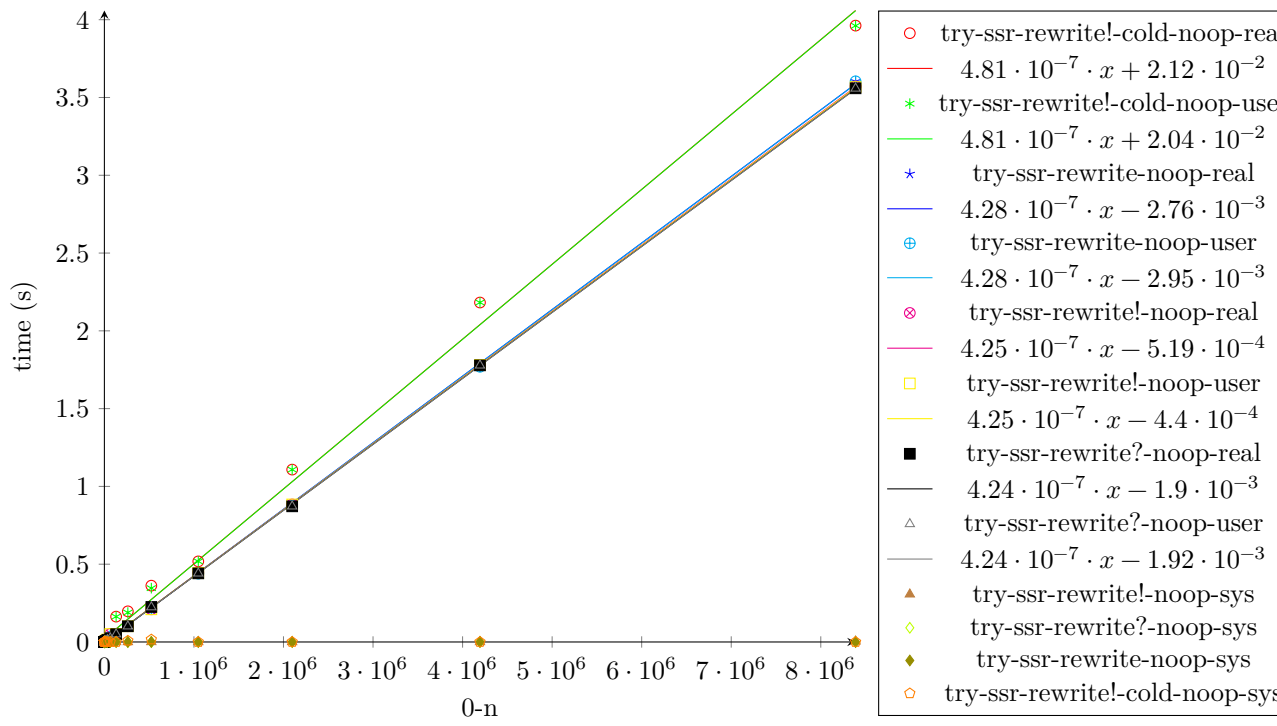Figure 8: timing-rewrite-repeated-app-ssrrewrite

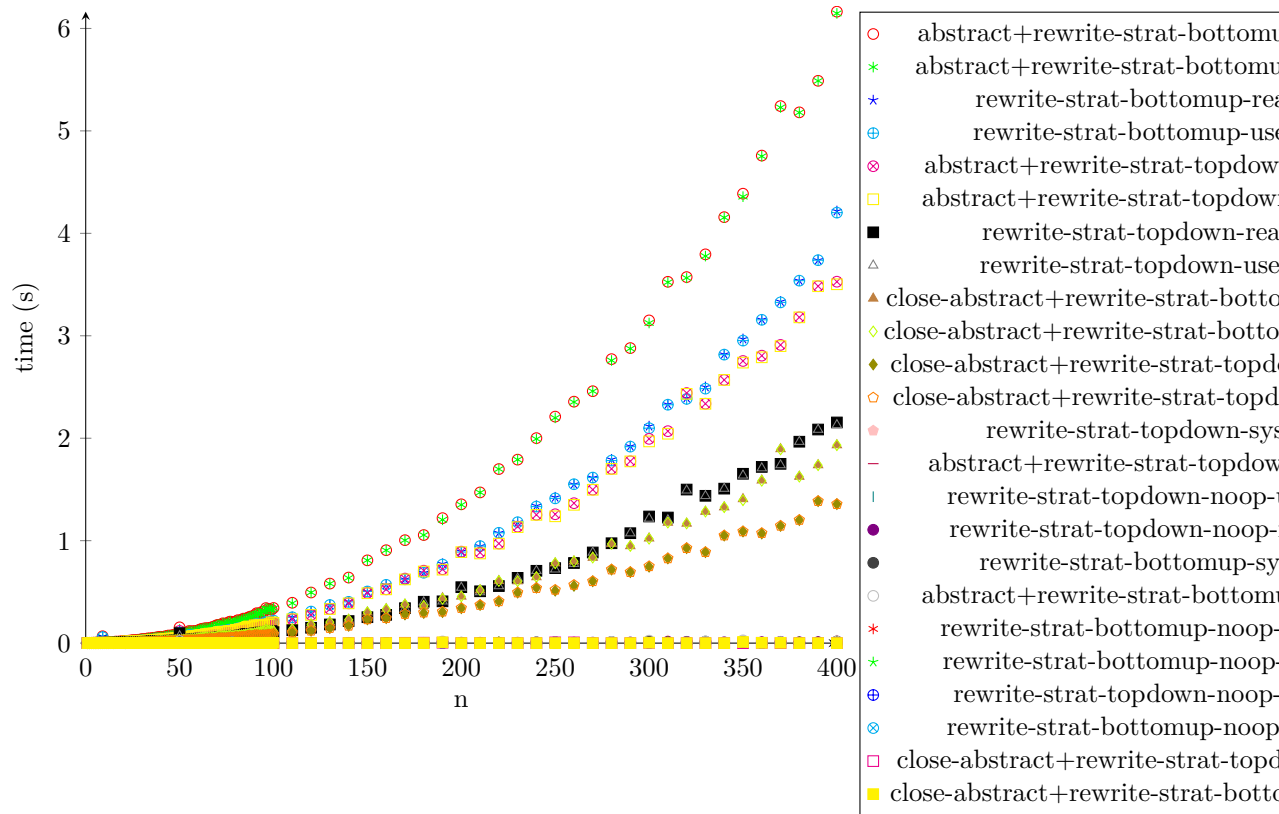Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn 1

Figure 10: timing-rewrite-repeated-app-rewrite-strat
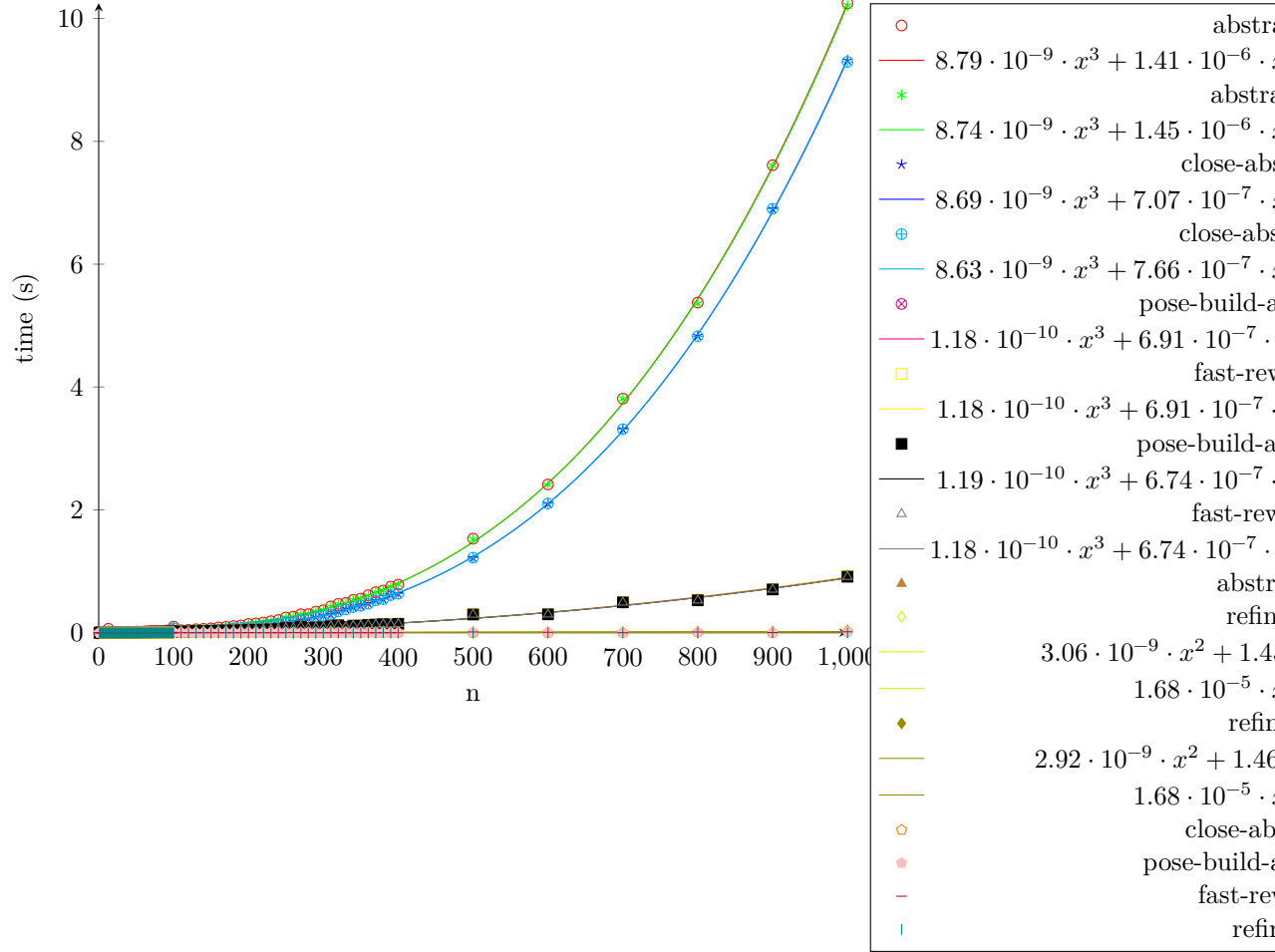
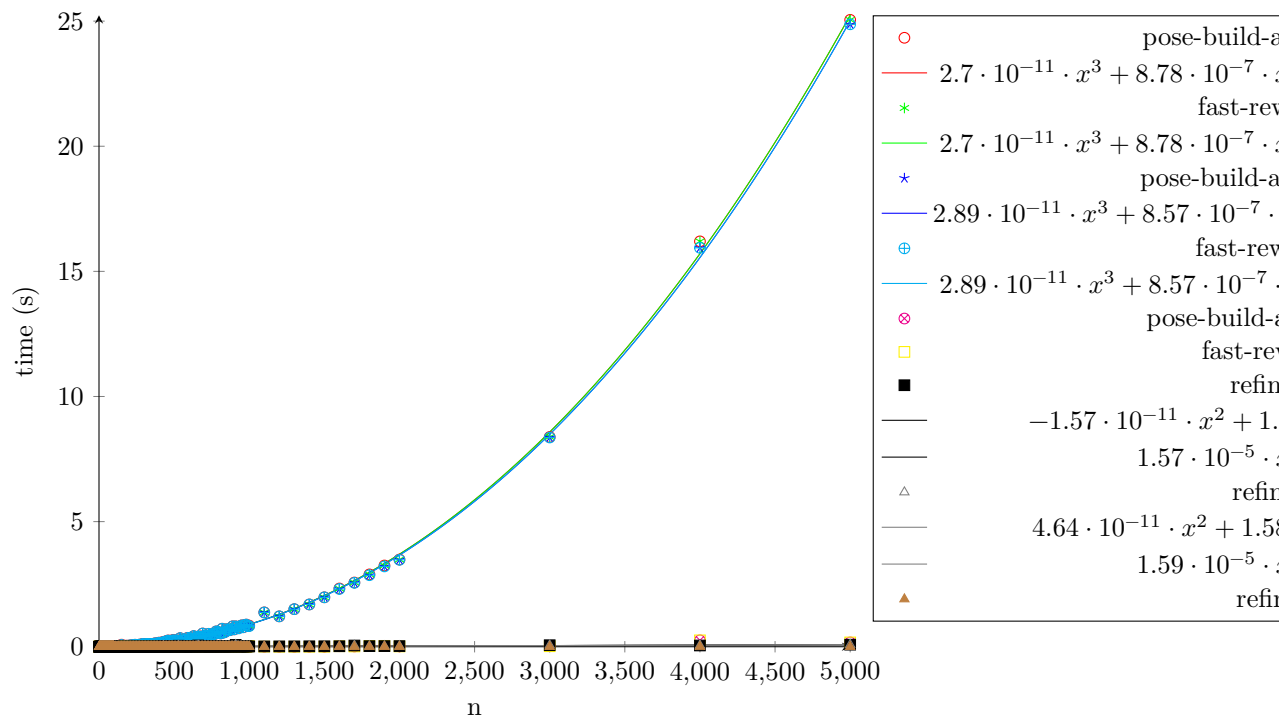Figure 11: timing-rewrite-repeated-app-fast-rewrite

11

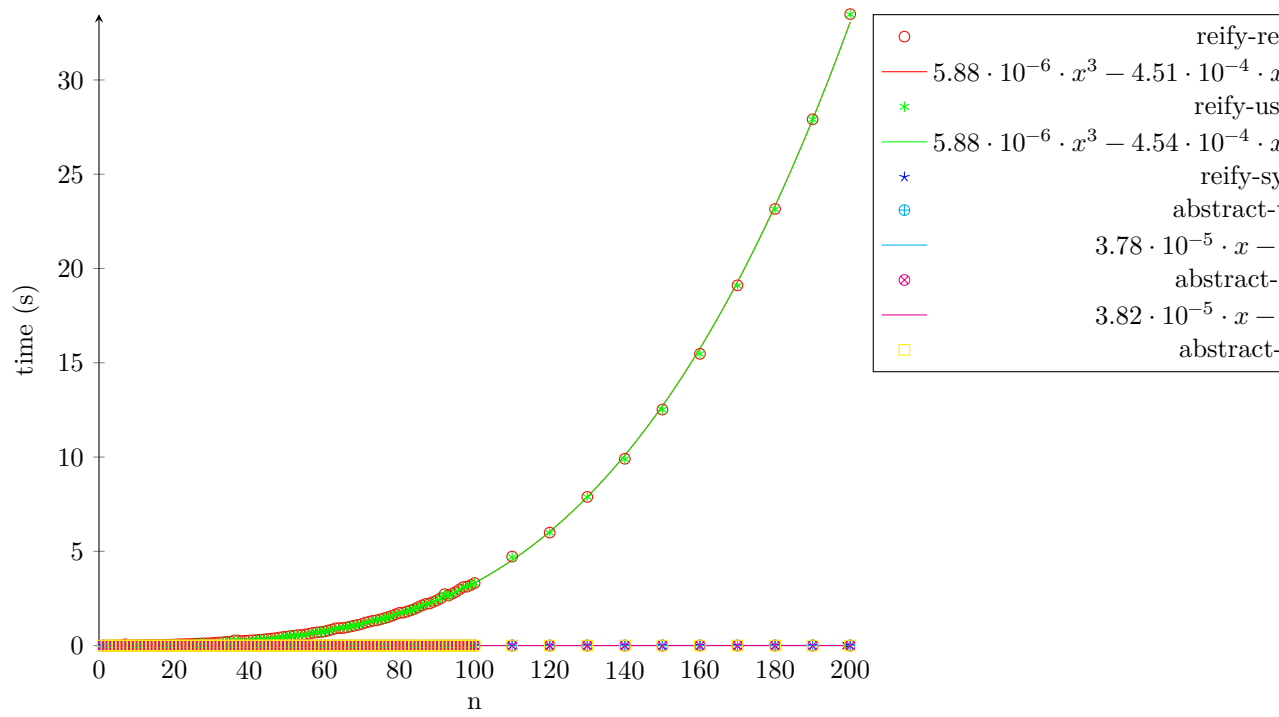Figure 12: timing-rewrite-repeated-app-fast-rewrite-no-abstract
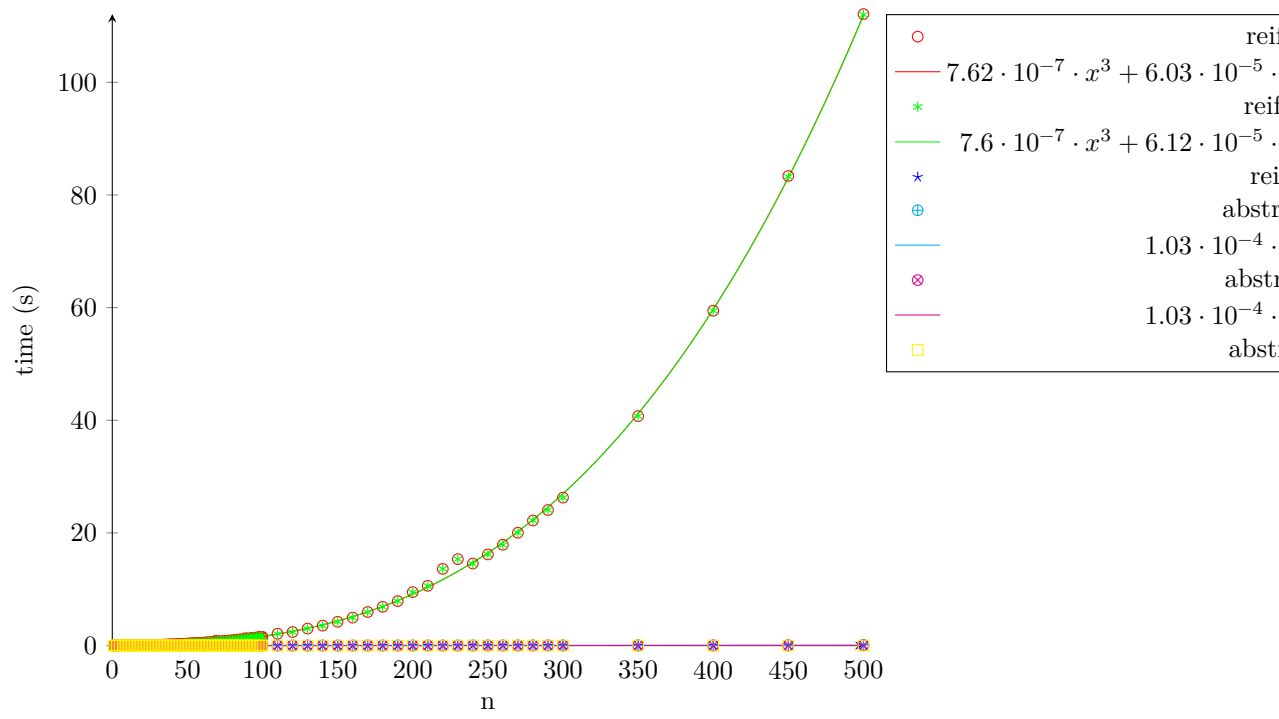
Figure 13: timing-typeclass-reification-let-in-HOAS

13

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

time (s)

n

20

15

10

5

0

0 500 1,000 1,500 2,000 2,500 3,000

○ abstract-real
— $2.88 \cdot 10^{-6} \cdot x^2 - 1.9 \cdot 10^{-3}$
* abstract-user
— $2.89 \cdot 10^{-6} \cdot x^2 - 1.91 \cdot 10^{-3}$
⋆ fast-rewrite-real
— $2.59 \cdot 10^{-6} \cdot x^2 - 1.94 \cdot 10^{-3}$
⊕ fast-rewrite-user
— $2.59 \cdot 10^{-6} \cdot x^2 - 1.95 \cdot 10^{-3}$
⊗ close-abstract-user
— $2.94 \cdot 10^{-7} \cdot x^2 + 3.94 \cdot 10^{-5} \cdot x$
□ close-abstract-real
— $2.94 \cdot 10^{-7} \cdot x^2 + 4.02 \cdot 10^{-5} \cdot x$
■ type-admit-real
— $3.91 \cdot 10^{-7} \cdot x^2 - 3.42 \cdot 10^{-4} \cdot x$
△ type-admit-user
— $3.91 \cdot 10^{-7} \cdot x^2 - 3.42 \cdot 10^{-4} \cdot x$
▲ refine-user
— $3.82 \cdot 10^{-7} \cdot x^2 - 3.13 \cdot 10^{-4} \cdot x$
— $4.81 \cdot 10^{-4} \cdot x - 5.88$
◇ refine-real
— $3.82 \cdot 10^{-7} \cdot x^2 - 3.13 \cdot 10^{-4} \cdot x$
— $4.81 \cdot 10^{-4} \cdot x - 5.88$
◆ type-admit-cast-real
— $3.83 \cdot 10^{-7} \cdot x^2 - 3.23 \cdot 10^{-4} \cdot x$
⬠ type-admit-cast-user
— $3.83 \cdot 10^{-7} \cdot x^2 - 3.24 \cdot 10^{-4} \cdot x$
⬠ type-pf-cast-real
— $3.69 \cdot 10^{-7} \cdot x^2 - 3.01 \cdot 10^{-4} \cdot x$
− type-pf-cast-user
— $3.69 \cdot 10^{-7} \cdot x^2 - 3.02 \cdot 10^{-4} \cdot x$
| check-admit-cast-user
— $3.64 \cdot 10^{-7} \cdot x^2 - 2.97 \cdot 10^{-4} \cdot x$
● check-admit-cast-real
— $3.63 \cdot 10^{-7} \cdot x^2 - 2.94 \cdot 10^{-4} \cdot x$
● check-pf-cast-real
— $3.48 \cdot 10^{-7} \cdot x^2 - 2.72 \cdot 10^{-4} \cdot x$
○ check-pf-cast-user
— $3.48 \cdot 10^{-7} \cdot x^2 - 2.72 \cdot 10^{-4} \cdot x$
* check-admit-user
— $3.48 \cdot 10^{-7} \cdot x^2 - 2.65 \cdot 10^{-4} \cdot x$
* check-admit-real
— $3.48 \cdot 10^{-7} \cdot x^2 - 2.65 \cdot 10^{-4} \cdot x$
⊕ build-eval-thunk-user
— $1.11 \cdot 10^{-4} \cdot x - 7.72$
⊗ build-eval-thunk-real
— $1.11 \cdot 10^{-4} \cdot x - 7.59$
□ build-thunk-user
— $1.1 \cdot 10^{-4} \cdot x - 7.89$
■ build-thunk-real
— $1.1 \cdot 10^{-4} \cdot x - 7.81$
△ check-l-user

15