

Figure 1: timing-pattern

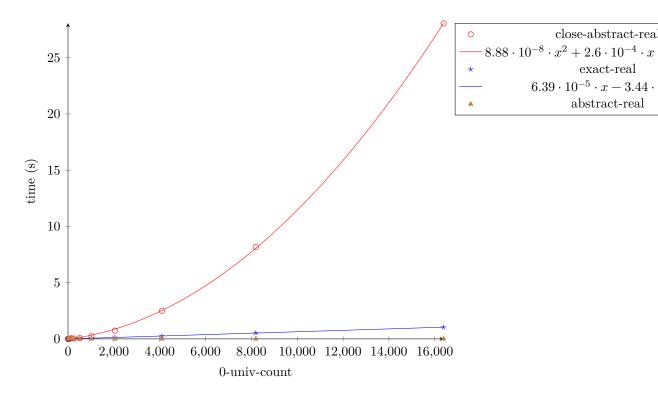


Figure 2: timing-n-polymorphic-universes param-1-n 0

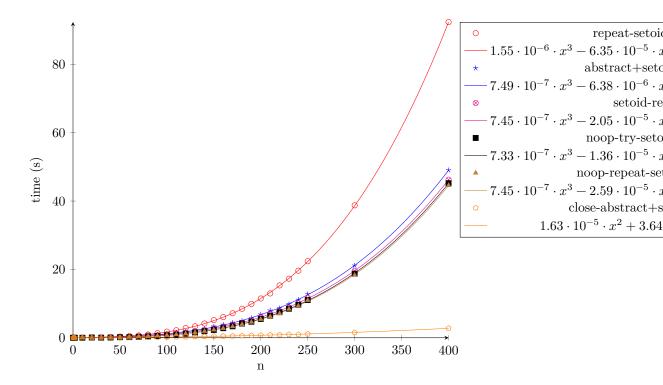


Figure 3: timing-repeat-setoid-rewrite-under-binders

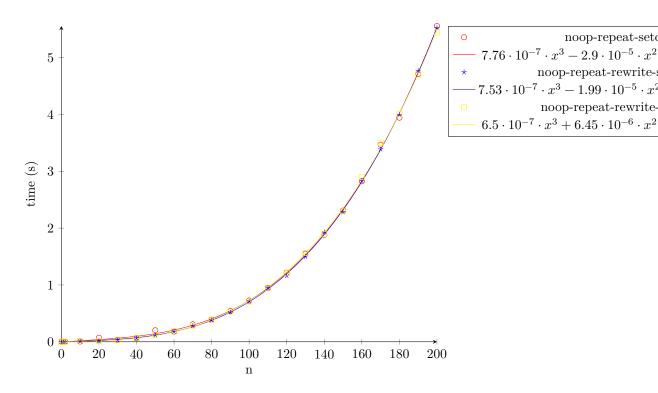


Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

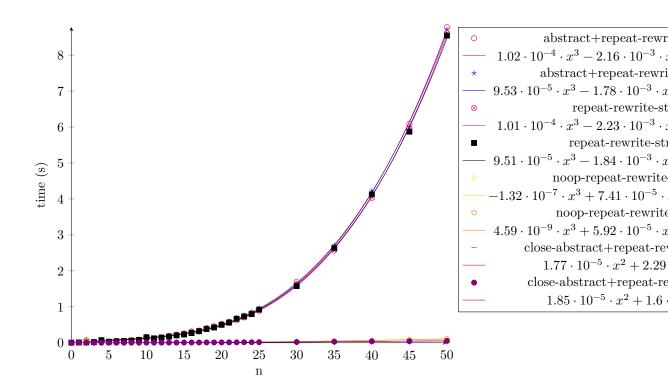
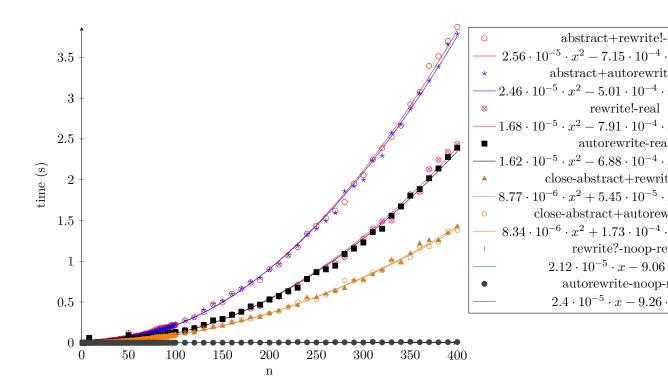
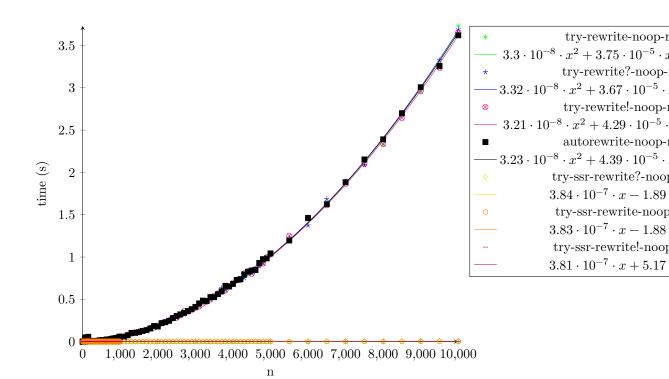


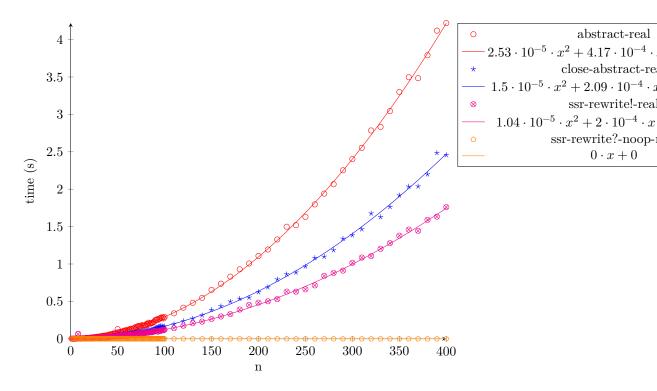
Figure 5: timing-rewrite-strat-under-binders



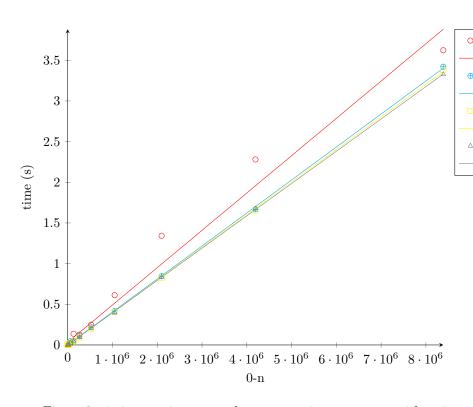
 $Figure \ 6: \ timing-rewrite-repeated-app-autorewrite \\$



 $Figure~7:~timing\mbox{-rewrite-repeated-app-autorewrite-noop}$



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



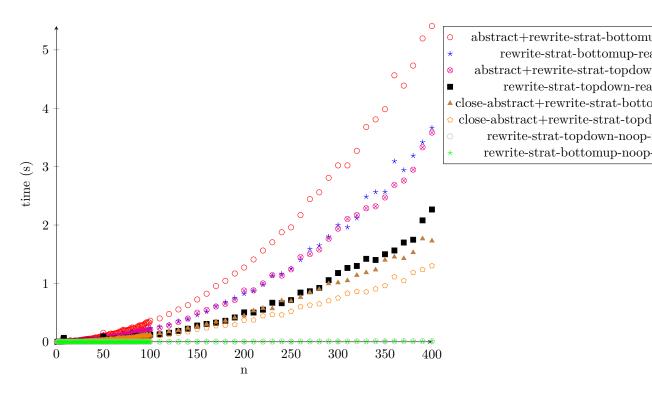
try-ssr-rewrite!-cold-noop-rea $4.59 \cdot 10^{-7} \cdot x + 3.27 \cdot 10^{-2}$

try-ssr-rewrite!-noop-real $4.06\cdot 10^{-7}\cdot x - 2.85\cdot 10^{-4}$

try-ssr-rewrite-noop-real $4.01\cdot 10^{-7}\cdot x - 3.57\cdot 10^{-3}$

try-ssr-rewrite?-noop-real $3.97\cdot 10^{-7}\cdot x - 1.78\cdot 10^{-3}$

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

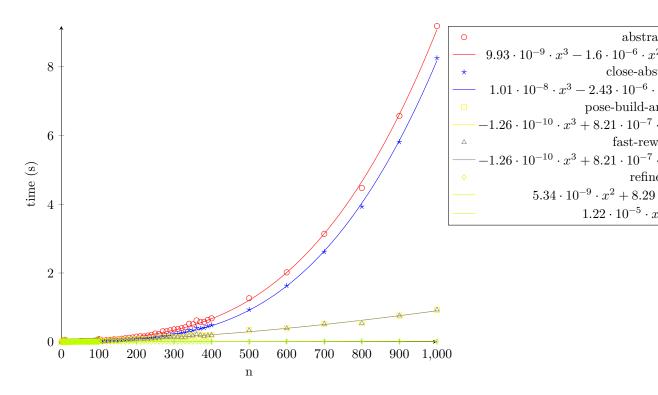


 $abstract + rewrite - strat - bottom \\ \\$

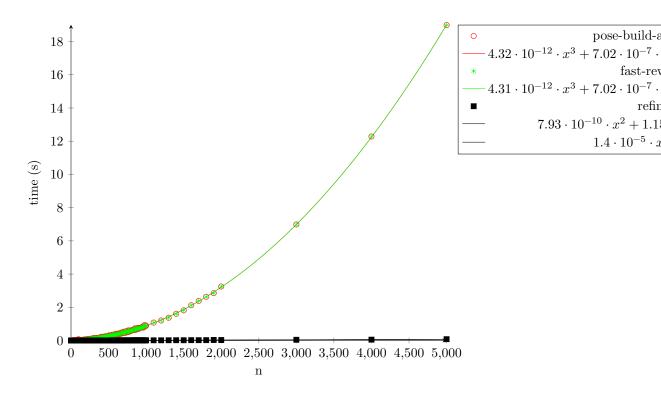
rewrite-strat-bottomup-rea abstract + rewrite - strat - topdowrewrite-strat-topdown-rea

rewrite-strat-topdown-nooprewrite-strat-bottomup-noop-

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



 $Figure~11:~timing\mbox{-rewrite-repeated-app-fast-rewrite}$



Figure~12:~timing-rewrite-repeated-app-fast-rewrite-no-abstract

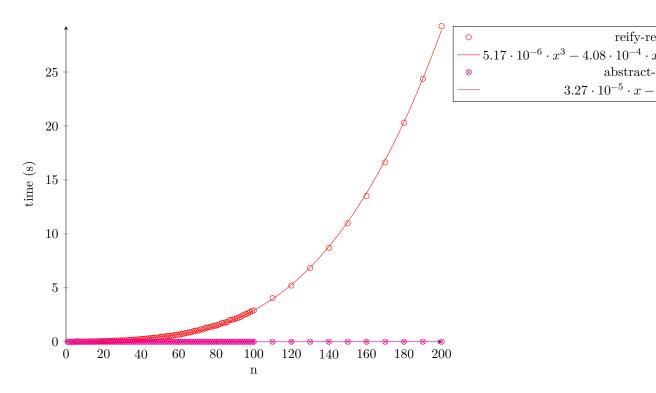


Figure 13: timing-typeclass-reification-let-in-HOAS

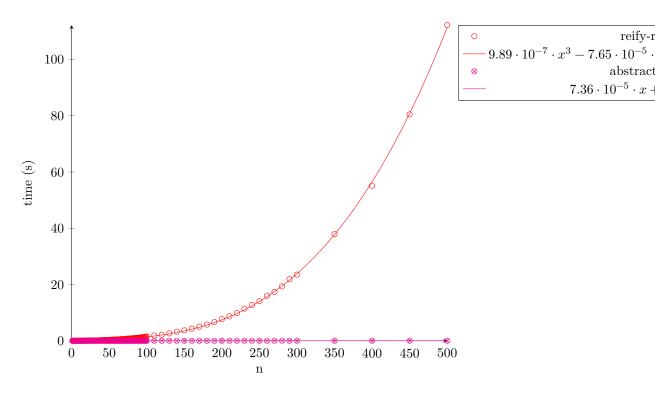


Figure 14: timing-typeclass-reification-let-in-PHOAS

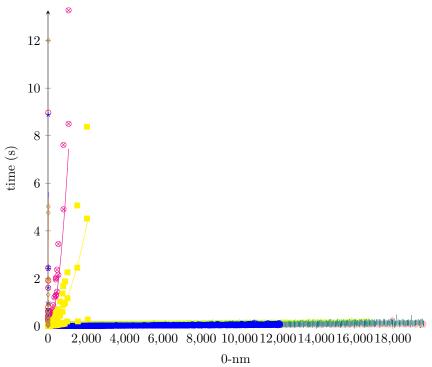


Figure 15: timing-rewrite-lift-lets-map param-1-n 1, param-2-m 1

rewrite-strat(bottomup-bot

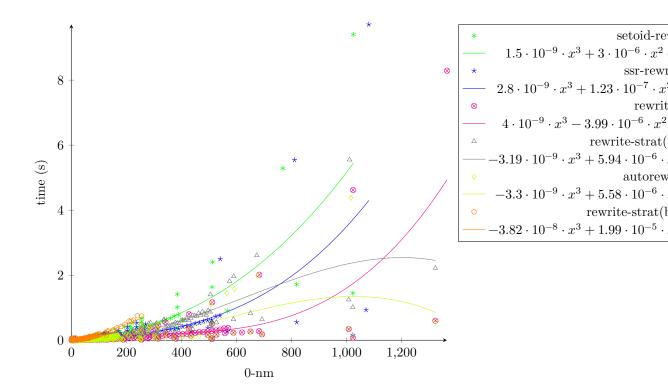
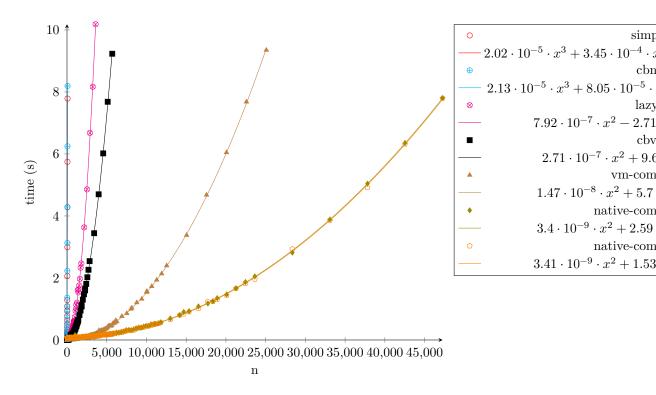


Figure 16: timing-rewrite-plus-0-tree param-1-n 0, param-2-m 1, param-3-input-size 5, param-4-output-size 3, param-5-num-rewrites 1



simp

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 $7.92 \cdot 10^{-7} \cdot x^2 - 2.71$

 $2.71 \cdot 10^{-7} \cdot x^2 + 9.6$

 $1.47 \cdot 10^{-8} \cdot x^2 + 5.7$

 $3.4\cdot 10^{-9}\cdot x^2 + 2.59$

 $3.41 \cdot 10^{-9} \cdot x^2 + 1.53$

Figure 17: timing-sieve-of-eratosthenes

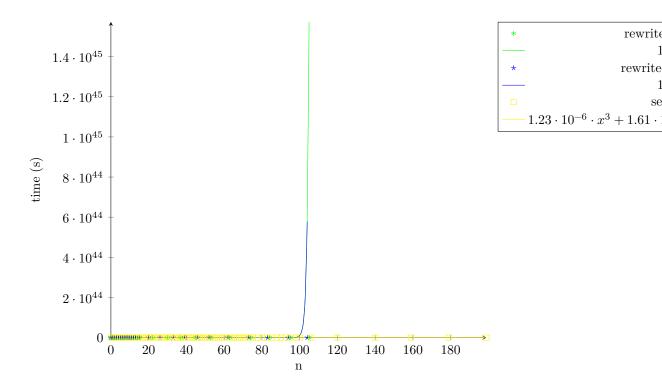


Figure 18: timing-rewrite-under-lets-plus-0 $\,$