

Figure 1: timing-pattern

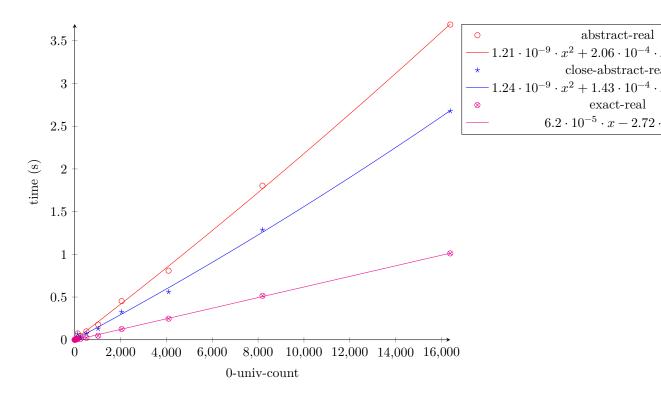
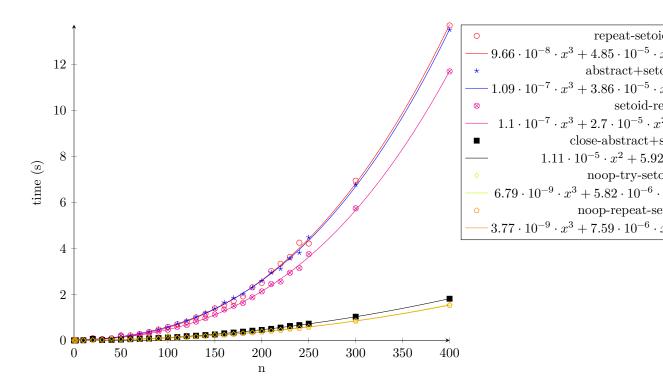
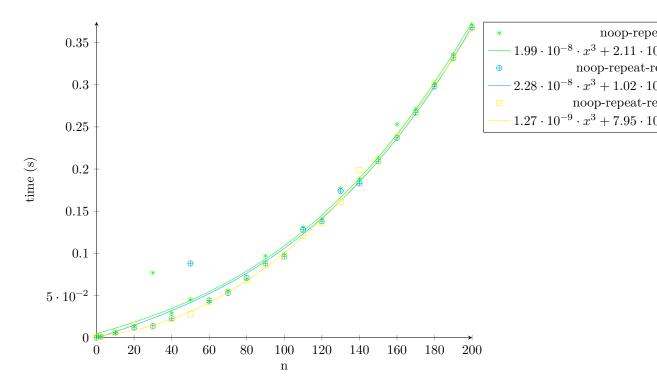


Figure 2: timing-n-polymorphic-universes param-1-n $\,0\,$



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



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

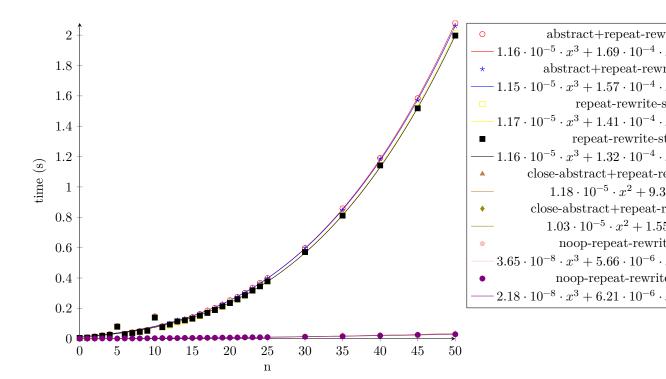
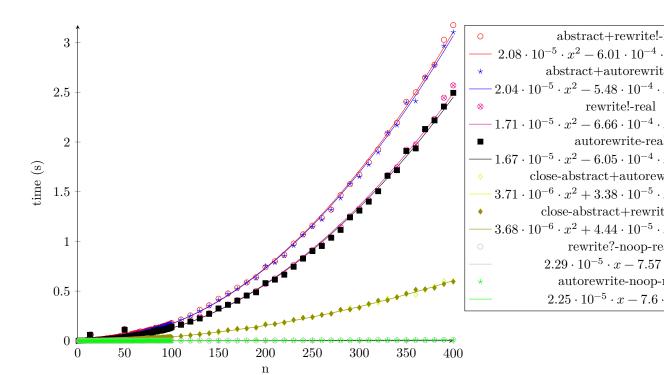
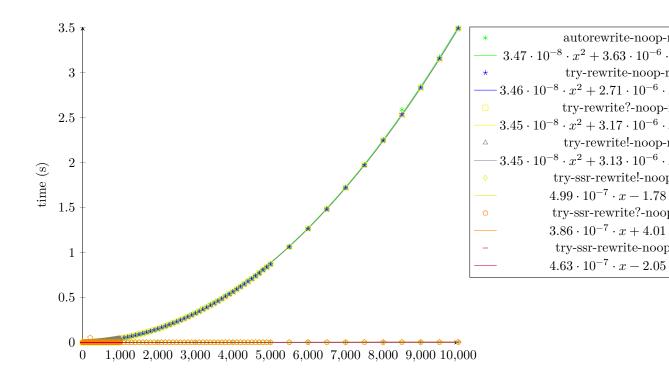


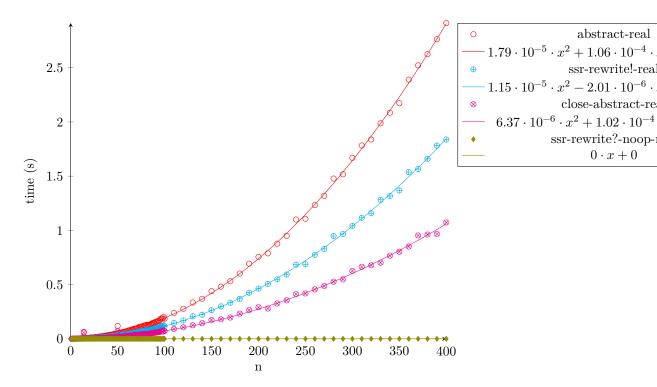
Figure 5: timing-rewrite-strat-under-binders



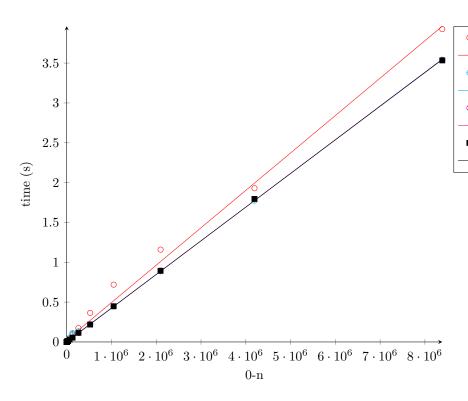
 $Figure \ 6: \ timing-rewrite-repeated-app-autorewrite \\$



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



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



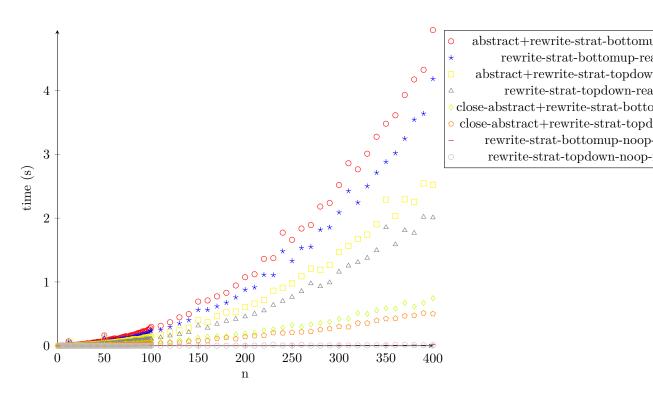
try-ssr-rewrite!-cold-noop-rea $4.69 \cdot 10^{-7} \cdot x + 2.47 \cdot 10^{-2}$

try-ssr-rewrite!-noop-real $4.22\cdot 10^{-7}\cdot x + 5.56\cdot 10^{-3}$

 $\begin{array}{l} \text{try-ssr-rewrite-noop-real} \\ 4.23 \cdot 10^{-7} \cdot x + 1.17 \cdot 10^{-3} \\ \text{try-ssr-rewrite?-noop-real} \end{array}$

 $4.23 \cdot 10^{-7} \cdot x + 1.38 \cdot 10^{-3}$

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



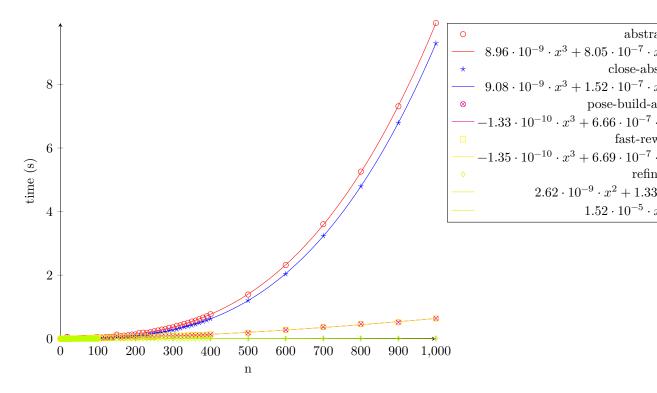
 $abstract + rewrite - strat - bottom \\ \\$ rewrite-strat-bottomup-rea abstract + rewrite - strat - topdow

rewrite-strat-topdown-rea

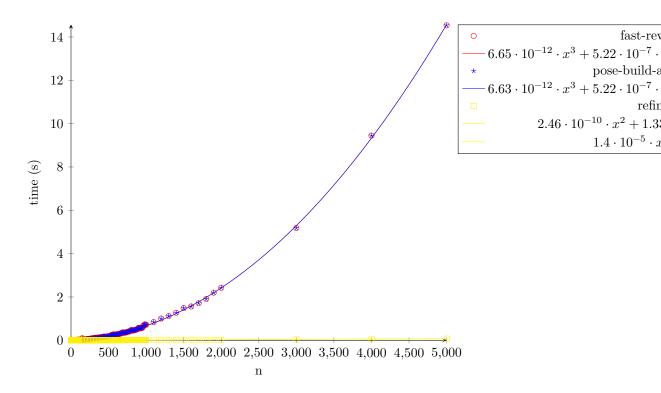
rewrite-strat-bottomup-noop-

rewrite-strat-topdown-noop-

 $Figure~10:~timing\mbox{-rewrite-repeated-app-rewrite-strat}$



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



 $Figure~12:~timing\mbox{-rewrite-repeated-app-fast-rewrite-no-abstract}$

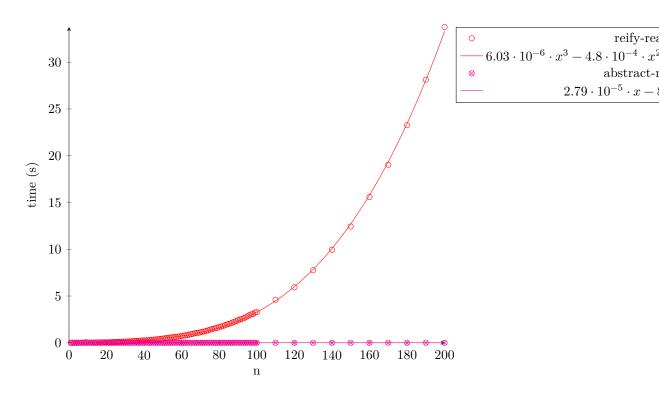
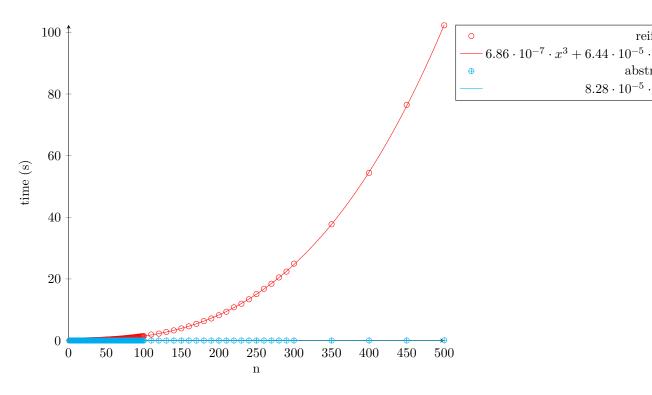


Figure 13: timing-typeclass-reification-let-in-HOAS



 ${\bf Figure~14:~timing-type class-reification-let-in-PHOAS}$

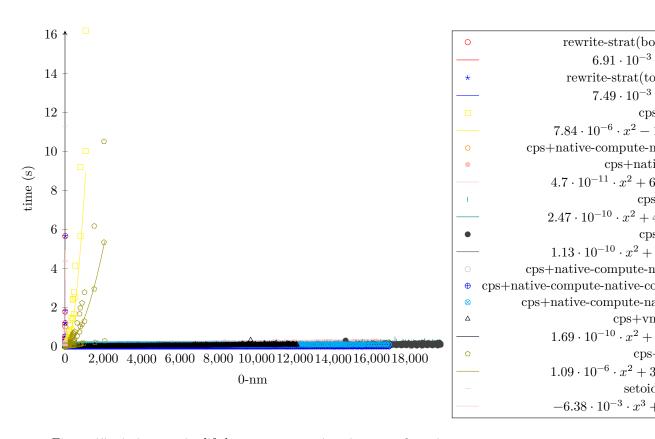


Figure 15: timing-rewrite-lift-lets-map param-1-n 1, param-2-m 1

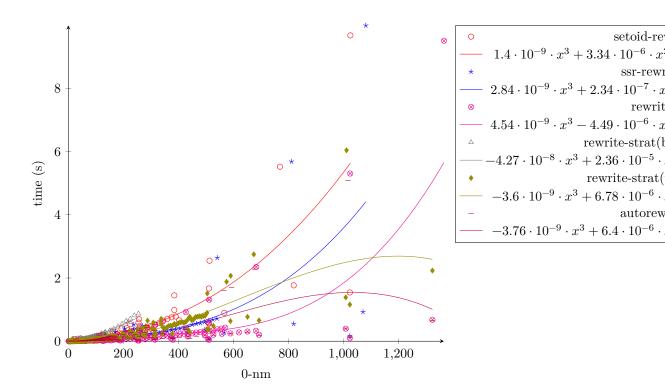


Figure 16: timing-rewrite-plus-0-tree param-1-n 0, param-2-m 1, param-3-input-size 5, param-4-output-size 3, param-5-num-rewrites 1

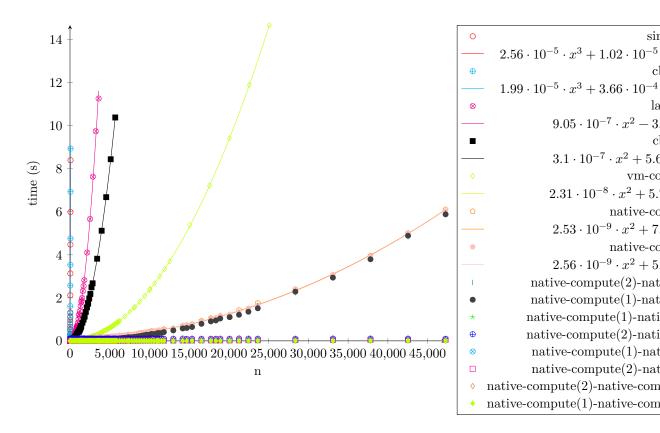
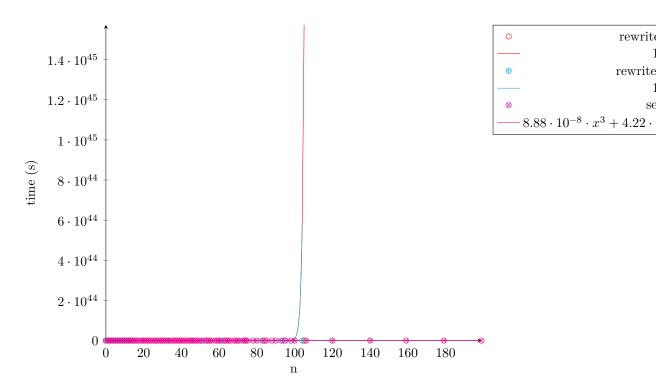


Figure 17: timing-sieve-of-eratosthenes



rewrite

rewrite

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

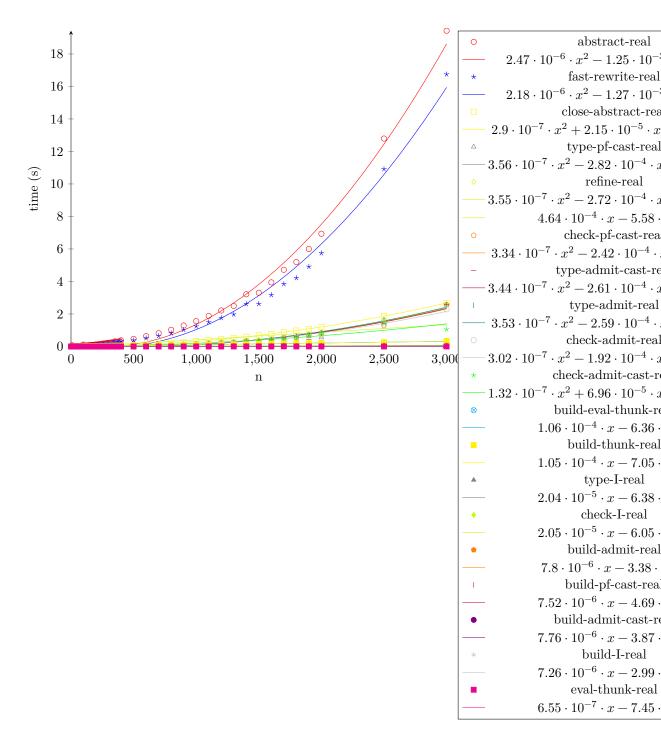


Figure 19: timing-rewrite-repeated-app-fast-rewrite-ltac2