

Figure 1: timing-pattern

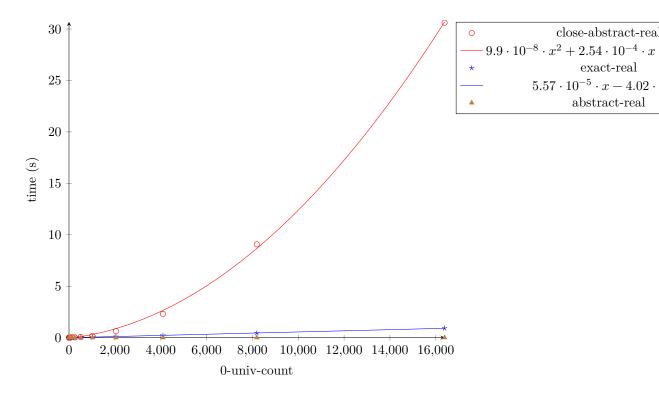
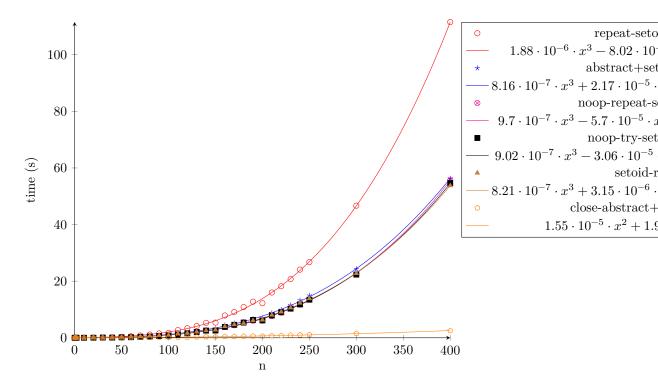
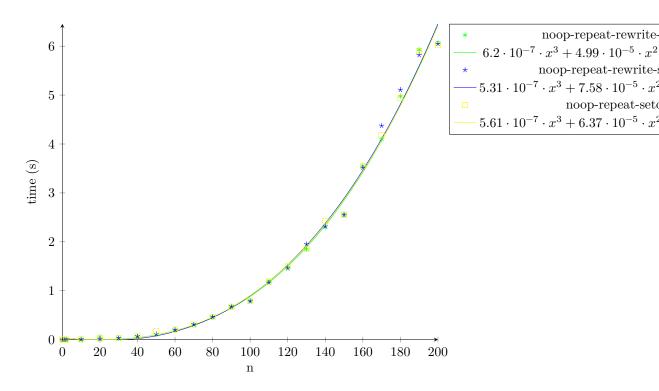


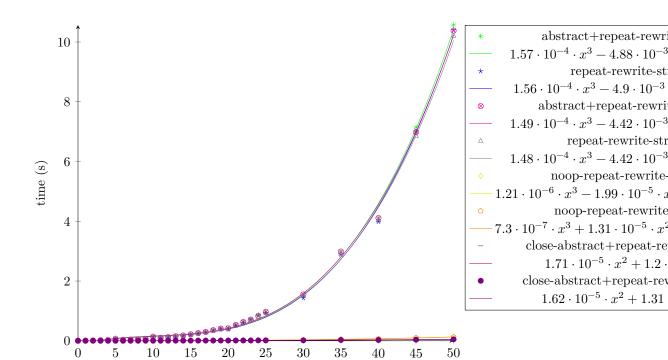
Figure 2: timing-n-polymorphic-universes param-1-n $\,0\,$



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

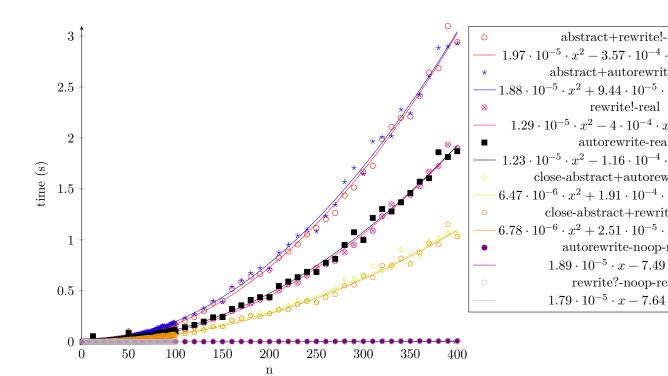


 $Figure \ 4: \ timing-repeat-setoid-rewrite-under-binders-noop \\$

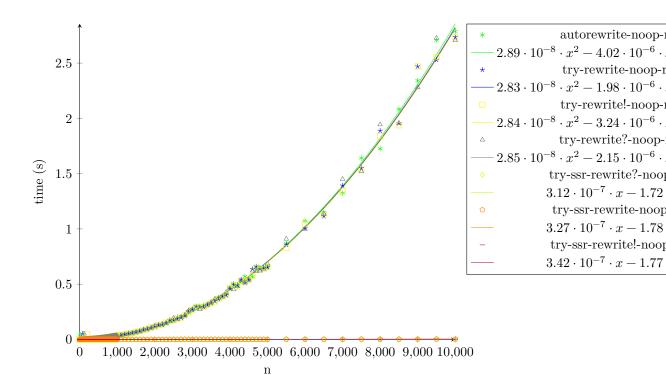


 $Figure\ 5:\ timing-rewrite-strat-under-binders$

 \mathbf{n}



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



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

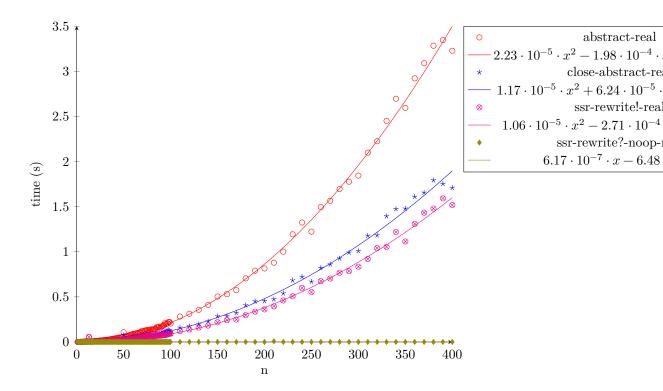
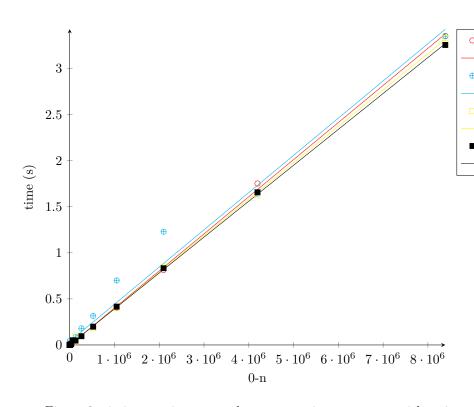


Figure 8: timing-rewrite-repeated-app-ssrrewrite

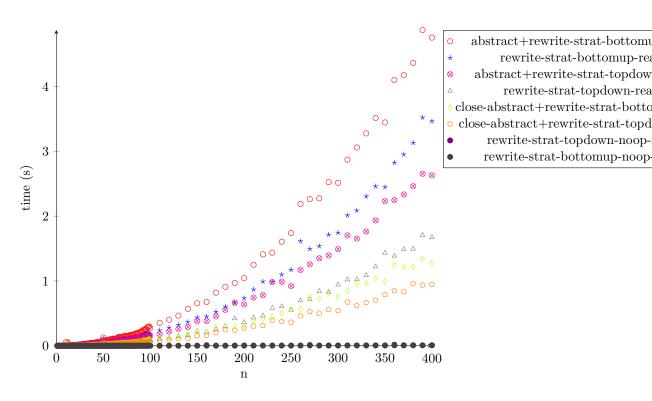


try-ssr-rewrite?-noop-real $4.02\cdot 10^{-7}\cdot x - 1.52\cdot 10^{-3}$

try-ssr-rewrite!-cold-noop-rea $4.04 \cdot 10^{-7} \cdot x + 3.78 \cdot 10^{-2}$ try-ssr-rewrite!-noop-real

 $\begin{aligned} &3.95\cdot 10^{-7}\cdot x-4.6\cdot 10^{-4}\\ &\text{try-ssr-rewrite-noop-real}\\ &3.9\cdot 10^{-7}\cdot x+1.61\cdot 10^{-3} \end{aligned}$

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



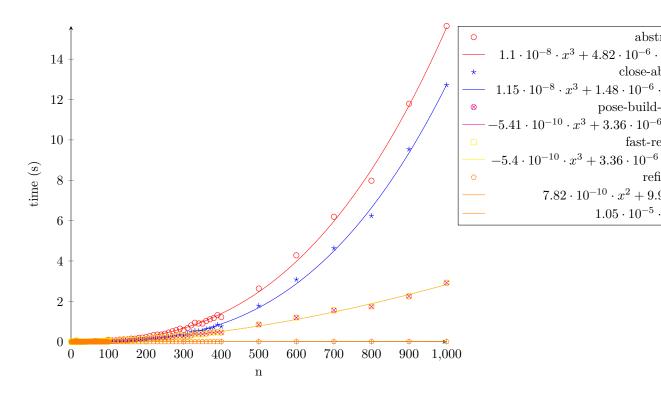
 $abstract + rewrite - strat - bottom \\ \\$ rewrite-strat-bottomup-rea abstract + rewrite - strat - topdow

rewrite-strat-topdown-rea

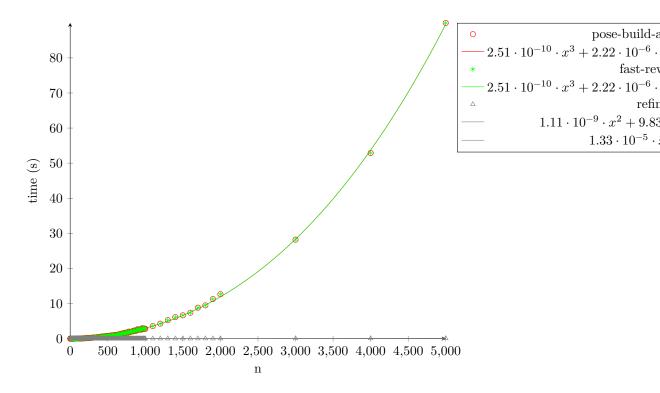
rewrite-strat-topdown-noop-

rewrite-strat-bottomup-noop-

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



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



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

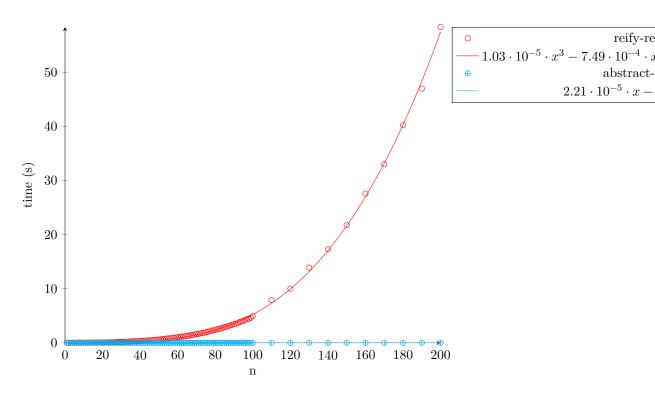


Figure 13: timing-typeclass-reification-let-in-HOAS

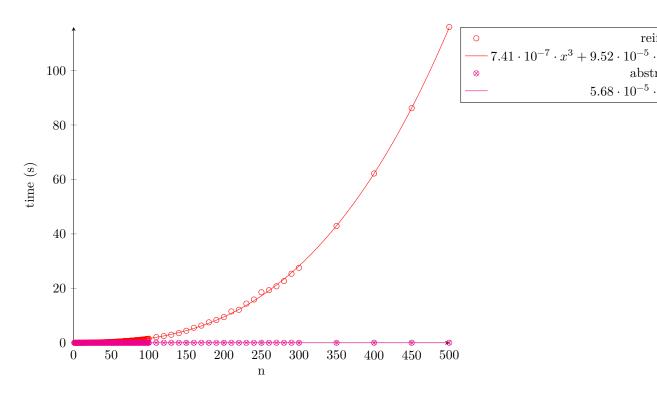


Figure 14: timing-typeclass-reification-let-in-PHOAS