

Figure 1: timing-pattern

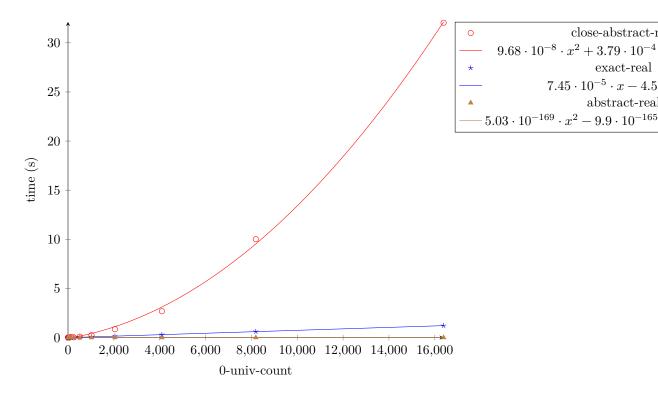
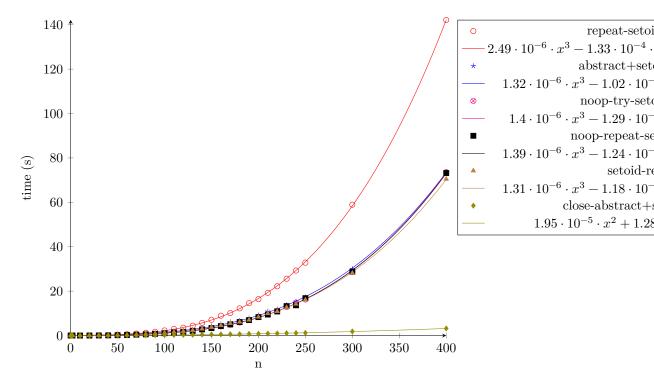


Figure 2: timing-n-polymorphic-universes param-1-n $\,0\,$



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

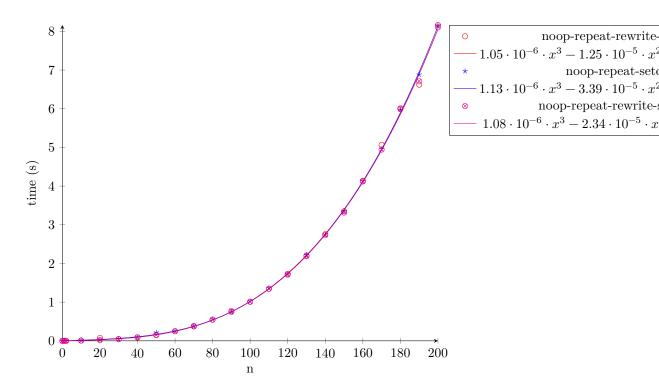
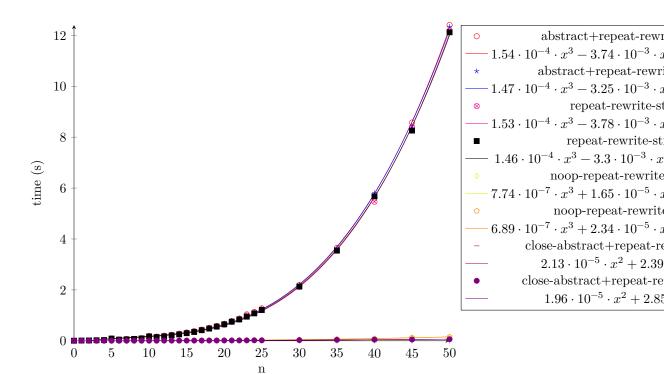
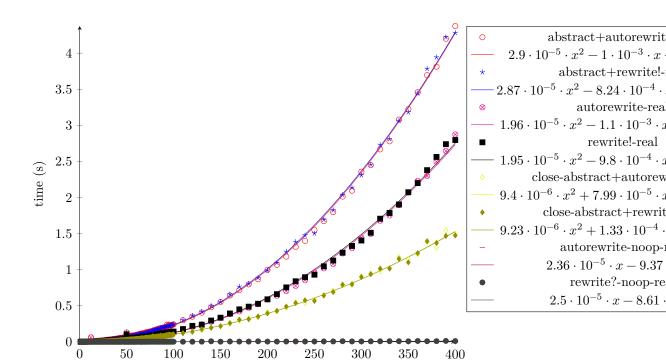


Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

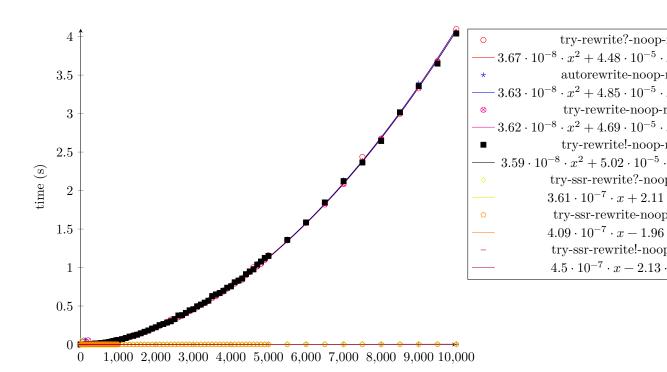


 $Figure\ 5:\ timing-rewrite-strat-under-binders$

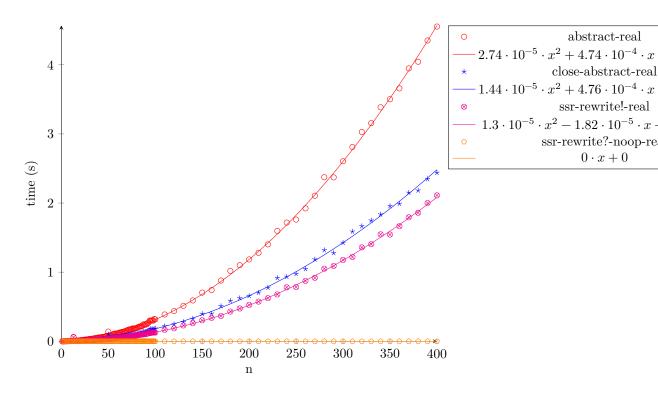


 $Figure \ 6: \ timing-rewrite-repeated-app-autorewrite \\$

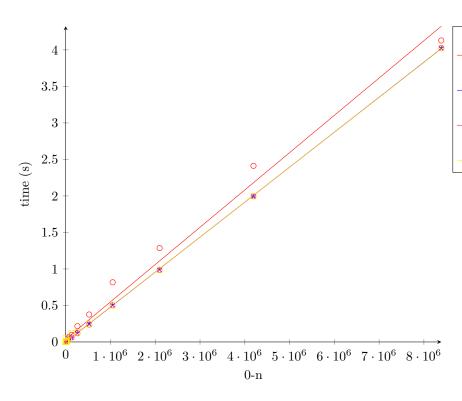
n



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



 ${\bf Figure~8:~timing\text{-}rewrite\text{-}repeated\text{-}app\text{-}ssrrewrite}$



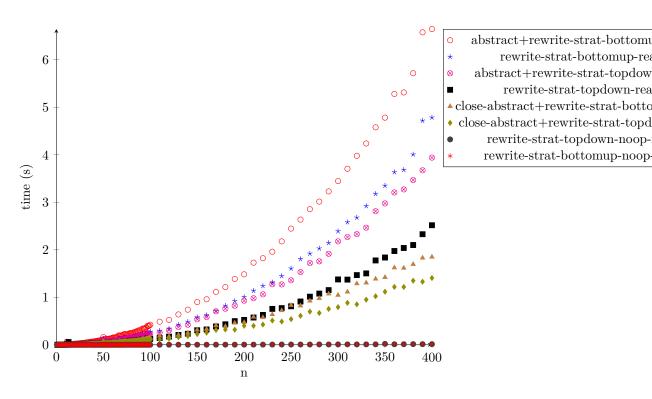
try-ssr-rewrite!-cold-noop-rea

 $5.11\cdot 10^{-7}\cdot x + 3.84\cdot 10^{-2}$ try-ssr-rewrite?-noop-real

 $\begin{array}{l} 4.79 \cdot 10^{-7} \cdot x - 1.67 \cdot 10^{-5} \\ \text{try-ssr-rewrite-noop-real} \end{array}$

 $\begin{aligned} &4.79\cdot 10^{-7}\cdot x - 3.51\cdot 10^{-4}\\ &\text{try-ssr-rewrite!-noop-real}\\ &4.78\cdot 10^{-7}\cdot x + 3.88\cdot 10^{-3} \end{aligned}$

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



rewrite-strat-bottomup-rea

rewrite-strat-topdown-rea

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

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

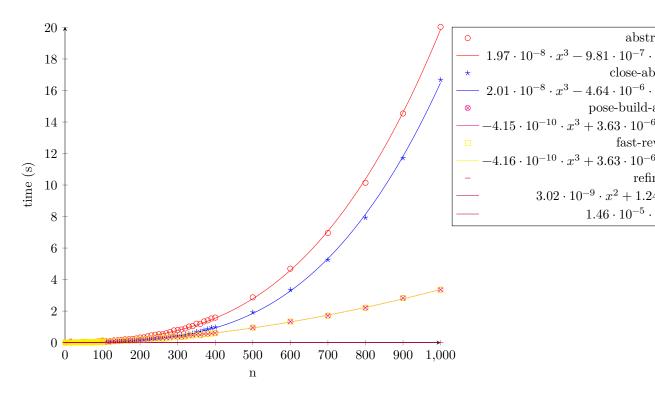
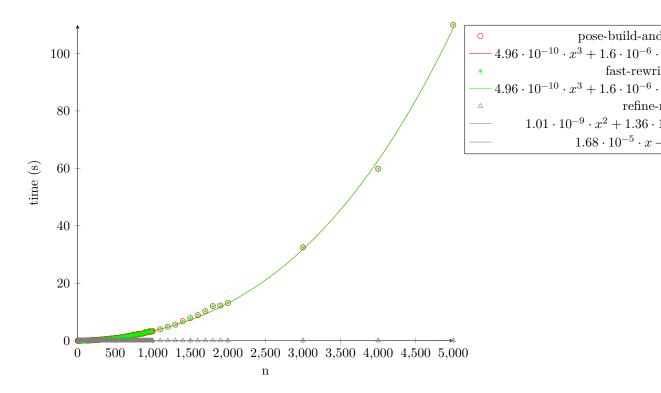


Figure 11: timing-rewrite-repeated-app-fast-rewrite



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

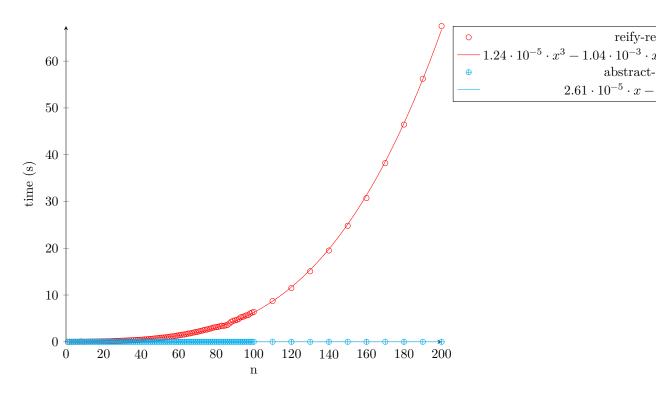


Figure 13: timing-typeclass-reification-let-in-HOAS

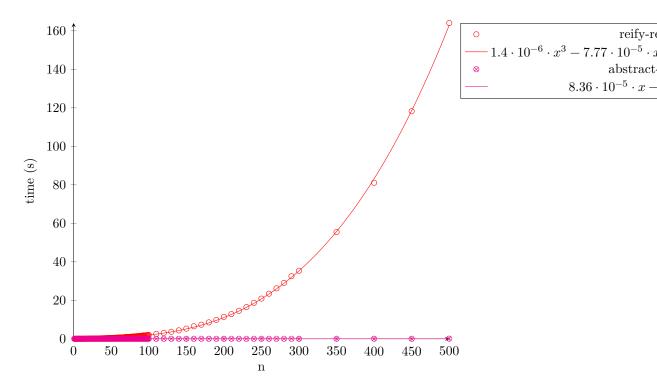


Figure 14: timing-typeclass-reification-let-in-PHOAS