

Figure 1: timing-pattern

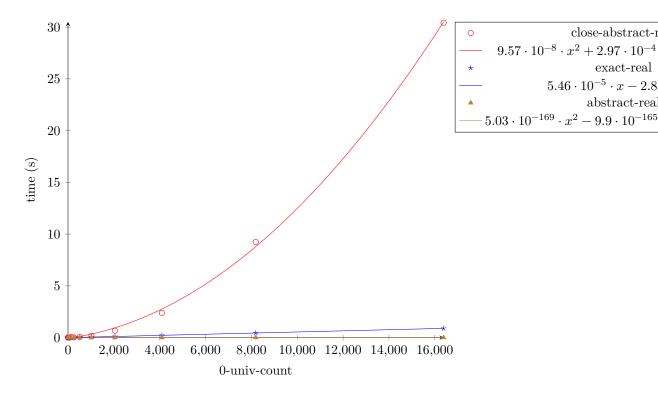


Figure 2: timing-n-polymorphic-universes param-1-n  $\,0\,$ 

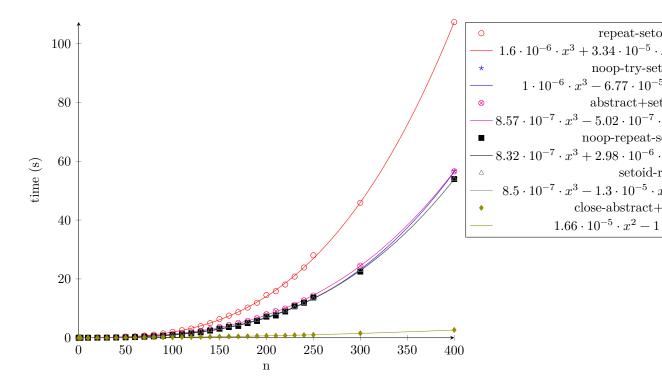
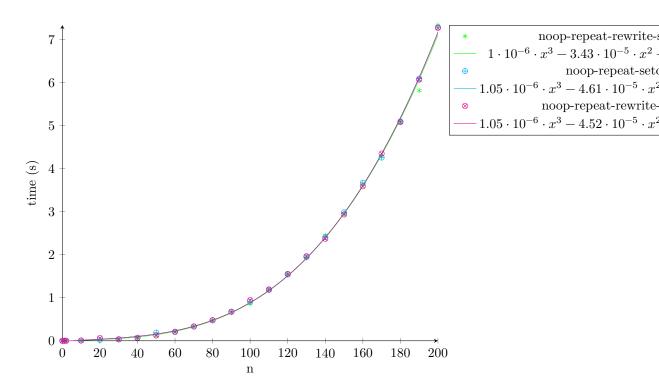
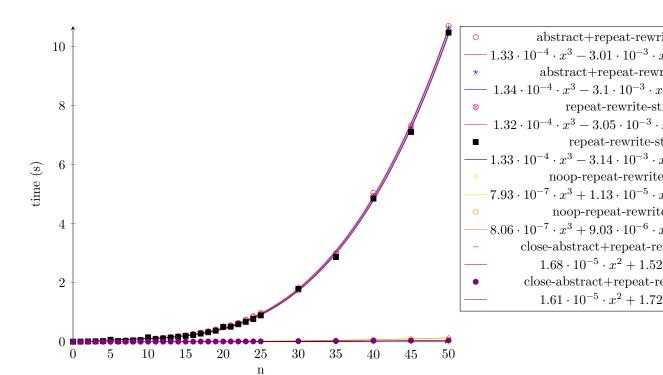


Figure 3: timing-repeat-setoid-rewrite-under-binders



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



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

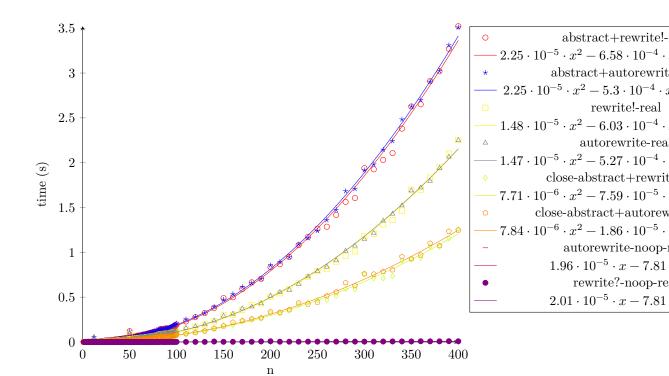
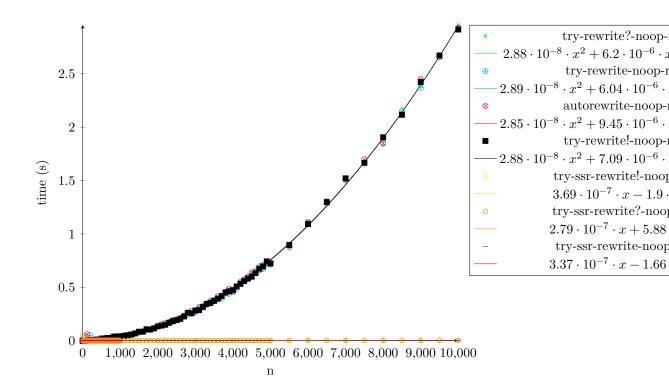
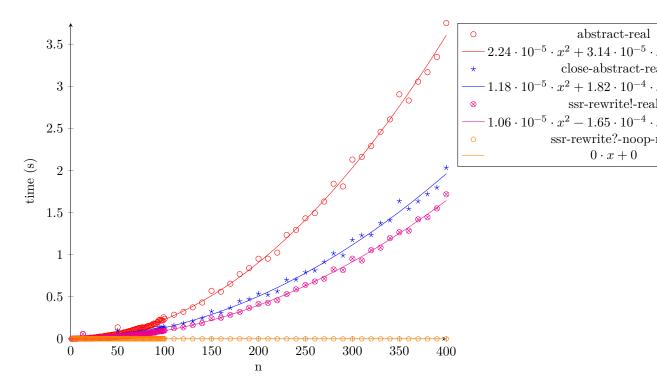


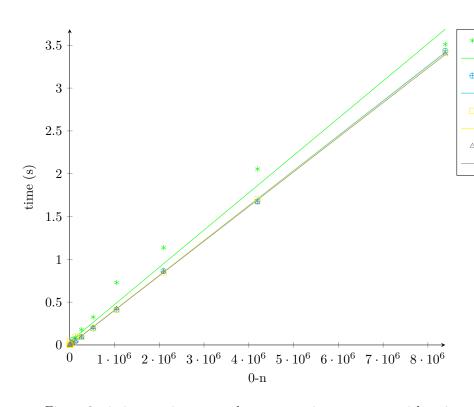
Figure 6: timing-rewrite-repeated-app-autorewrite



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



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



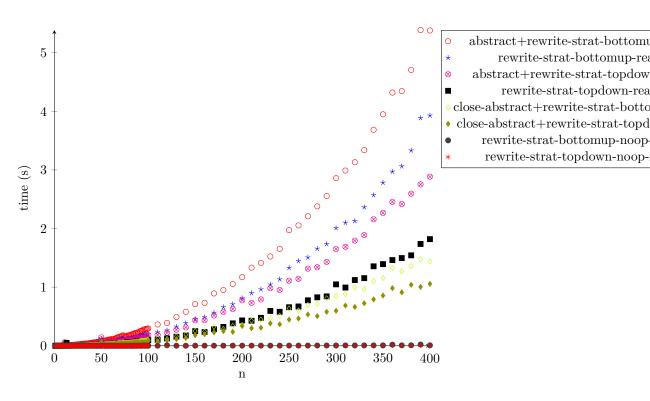
try-ssr-rewrite!-cold-noop-rea

 $\begin{array}{l} 4.35\cdot 10^{-7}\cdot x + 3.6\cdot 10^{-2}\\ \text{try-ssr-rewrite-noop-real} \end{array}$ 

 $\begin{aligned} &4.08 \cdot 10^{-7} \cdot x - 1.96 \cdot 10^{-3} \\ &\text{try-ssr-rewrite!-noop-real} \\ &4.06 \cdot 10^{-7} \cdot x + 1.83 \cdot 10^{-3} \end{aligned}$ 

try-ssr-rewrite?-noop-real  $4.04\cdot 10^{-7}\cdot x - 1.41\cdot 10^{-3}$ 

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

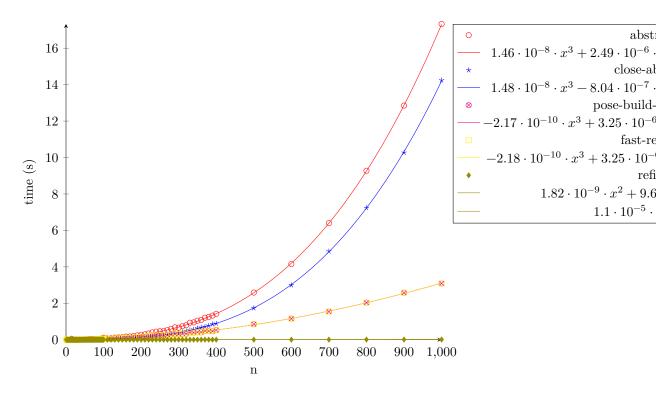


rewrite-strat-bottomup-realabstract + rewrite - strat - topdow

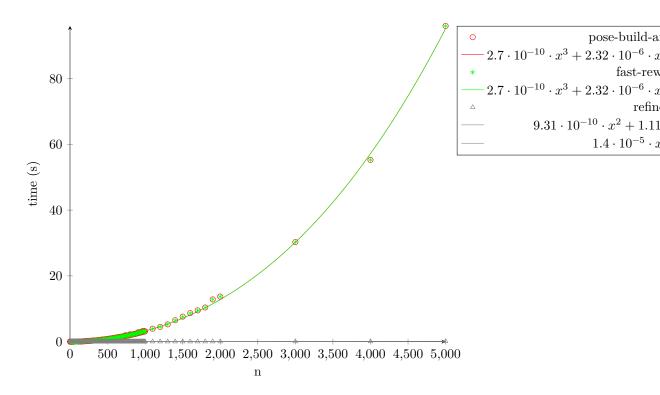
rewrite-strat-topdown-rea

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

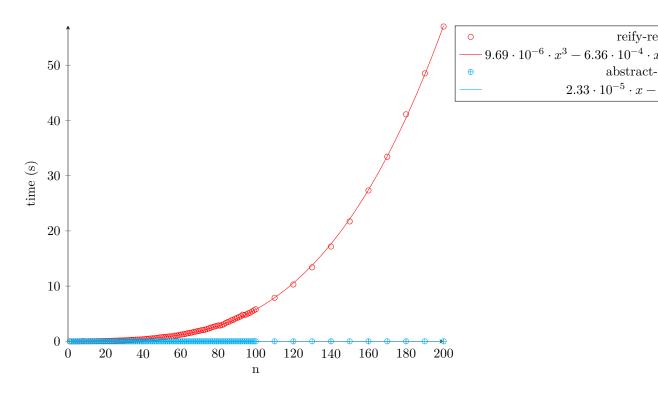
 $Figure\ 10:\ timing-rewrite-repeated-app-rewrite-strat$ 



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



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



 ${\bf Figure~13:~timing-type class-reification-let-in-HOAS}$ 

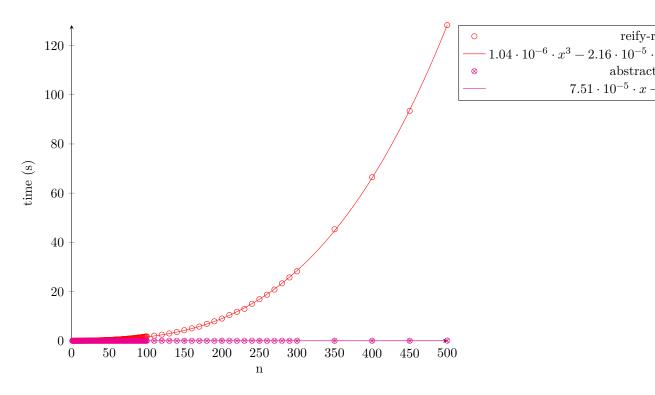


Figure 14: timing-typeclass-reification-let-in-PHOAS