

Figure 1: timing-pattern

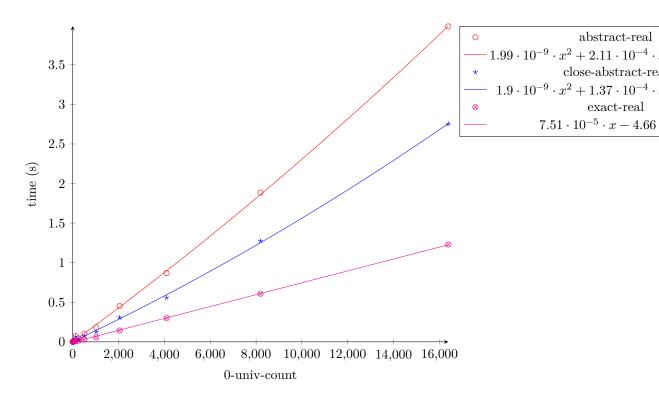


Figure 2: timing-n-polymorphic-universes param-1-n  $\,0\,$ 

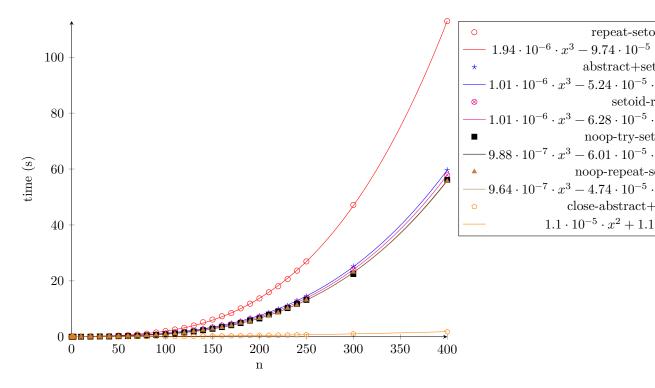
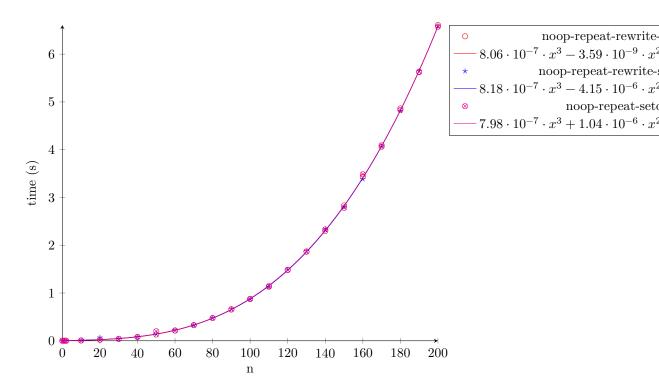
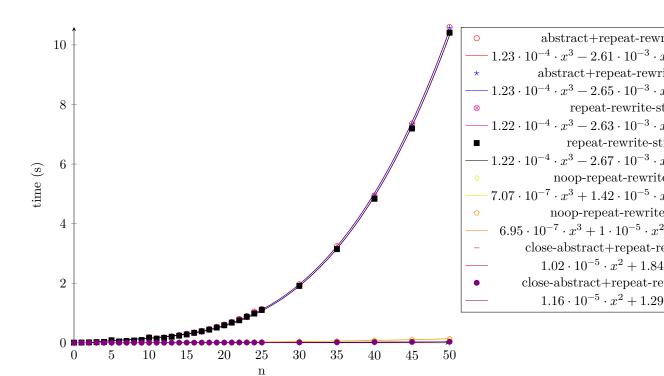


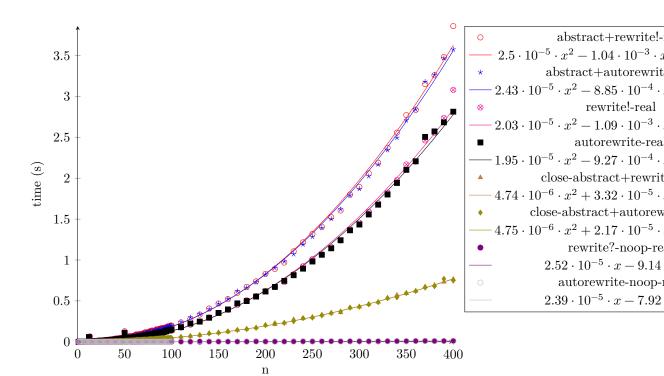
Figure 3: timing-repeat-setoid-rewrite-under-binders



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



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



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

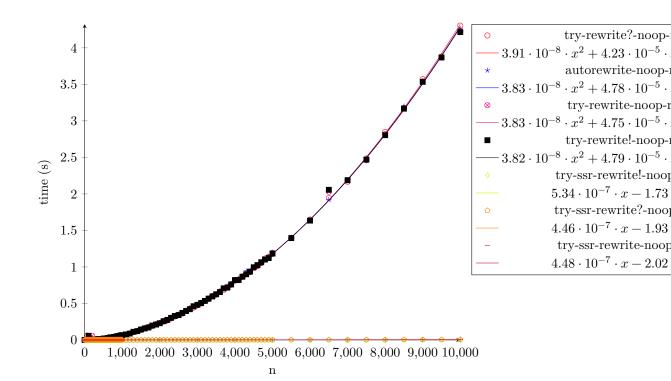
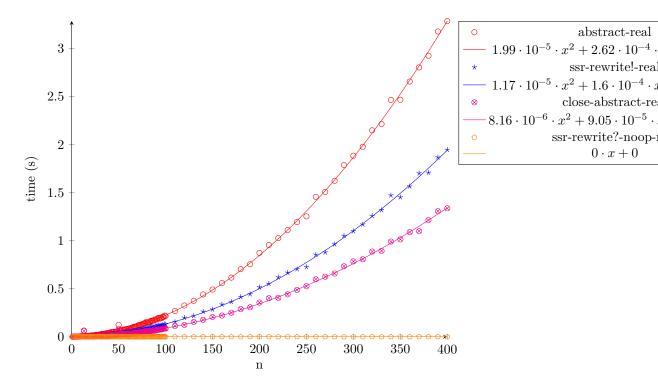
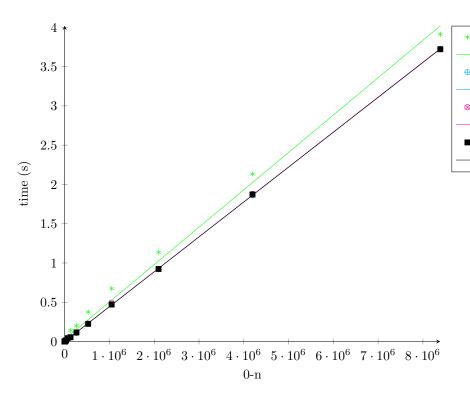


Figure 7: timing-rewrite-repeated-app-autorewrite-noop



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



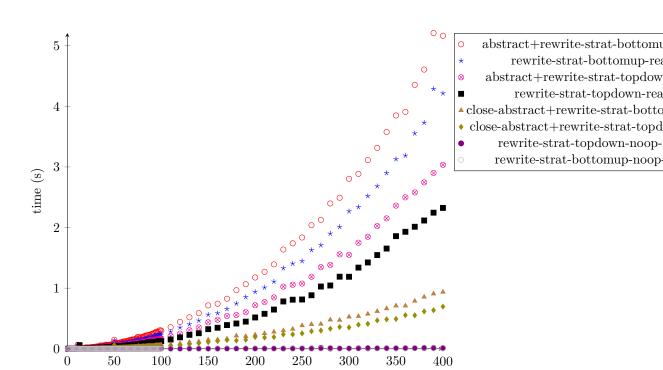
try-ssr-rewrite!-cold-noop-rea  $4.76 \cdot 10^{-7} \cdot x + 2.93 \cdot 10^{-2}$ 

 $\begin{array}{l} \text{try-ssr-rewrite-noop-real} \\ 4.44 \cdot 10^{-7} \cdot x - 1.14 \cdot 10^{-3} \\ \text{try-ssr-rewrite?-noop-real} \end{array}$ 

 $\begin{array}{l} 4.44 \cdot 10^{-7} \cdot x + 7.23 \cdot 10^{-4} \\ \text{try-ssr-rewrite!-noop-real} \end{array}$ 

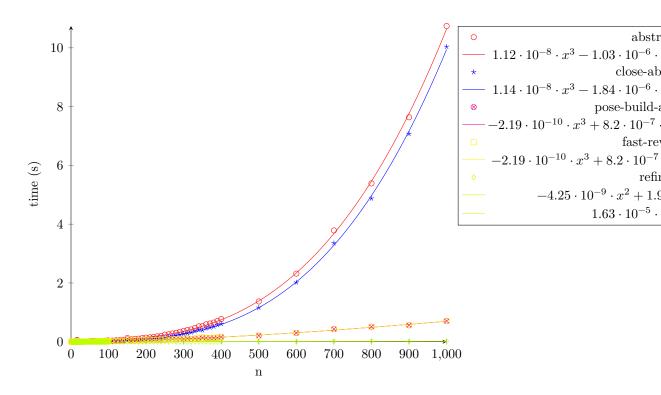
 $4.44\cdot 10^{-7}\cdot x + 2.77\cdot 10^{-4}$ 

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

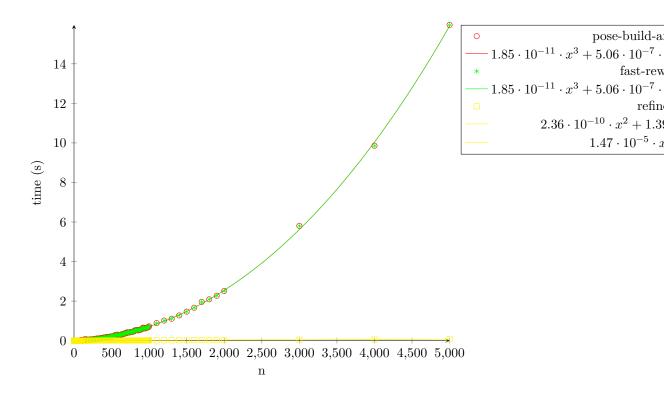


 $Figure\ 10:\ timing-rewrite-repeated-app-rewrite-strat$ 

n



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



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

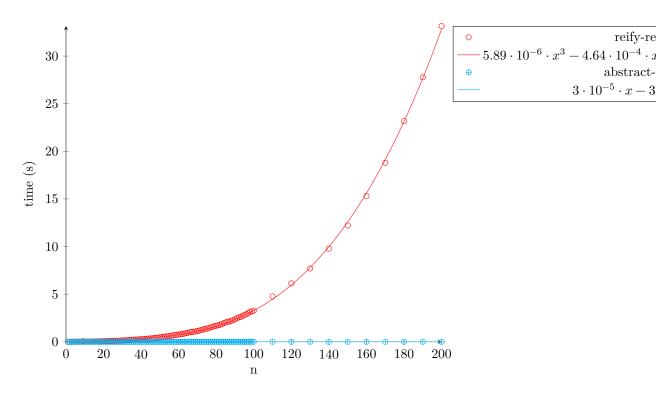
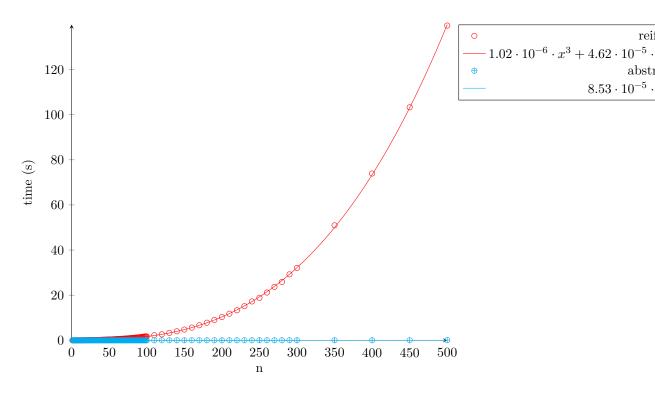


Figure 13: timing-typeclass-reification-let-in-HOAS



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

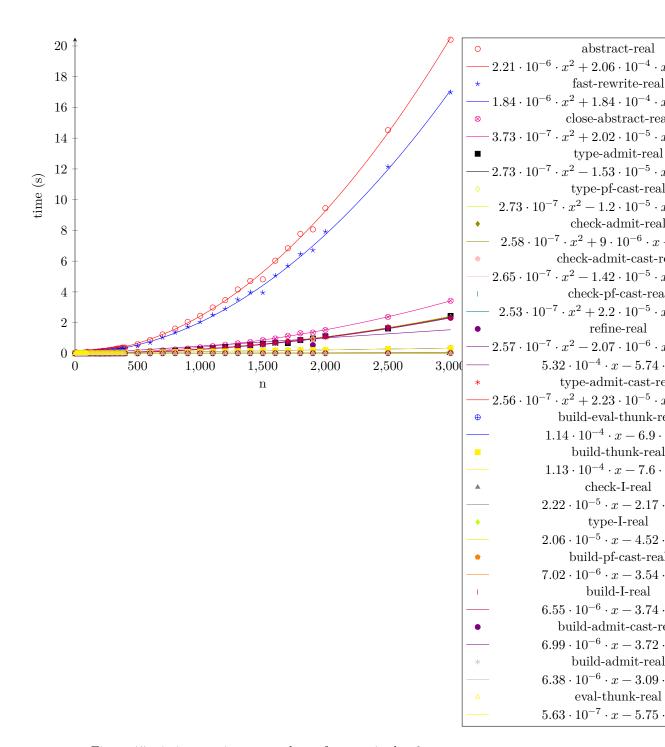


Figure 15: timing-rewrite-repeated-app-fast-rewrite-ltac2