

Figure 1: timing-pattern

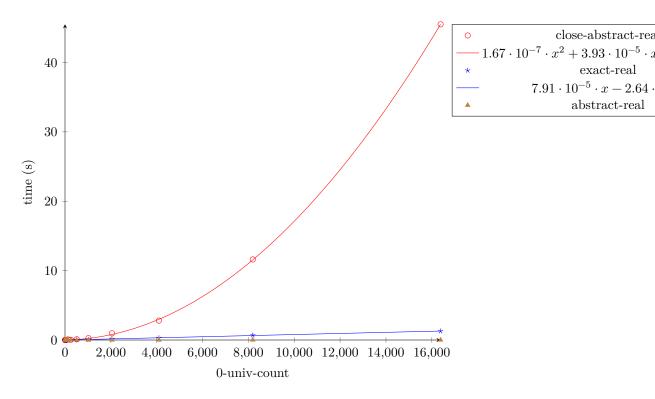
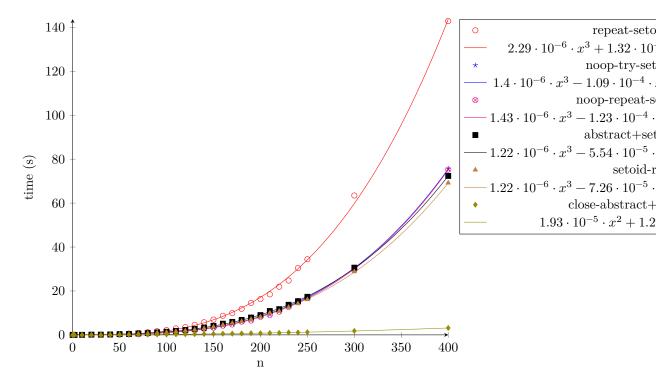
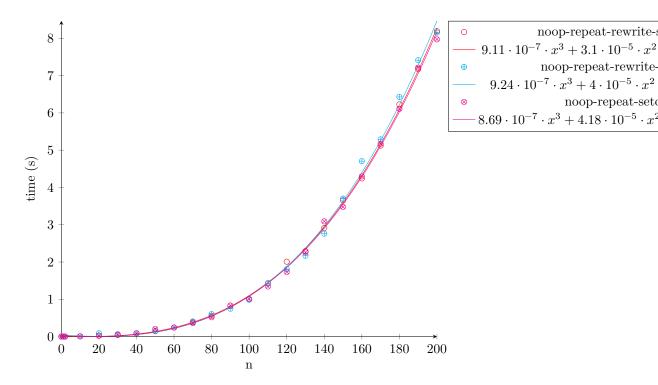


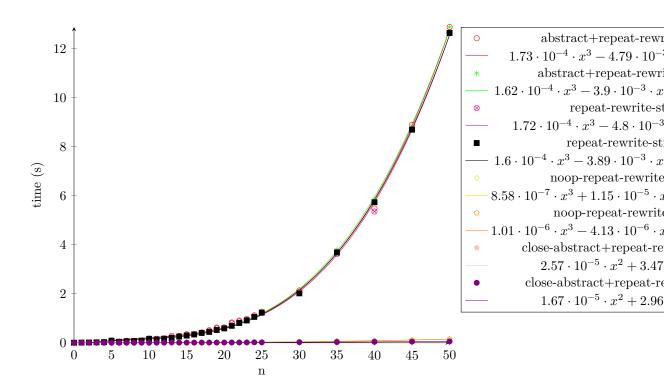
Figure 2: timing-n-polymorphic-universes param-1-n 0



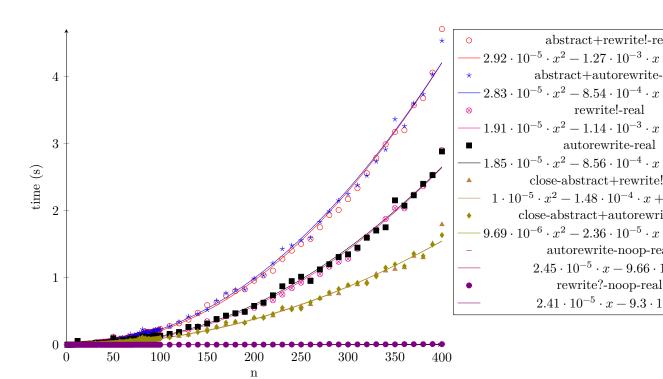
 $Figure \ 3: \ timing-repeat-setoid-rewrite-under-binders$ 



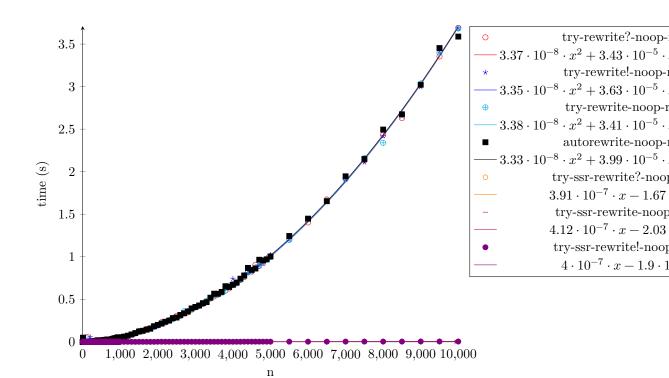
 $Figure \ 4: \ timing-repeat-setoid-rewrite-under-binders-noop \\$ 



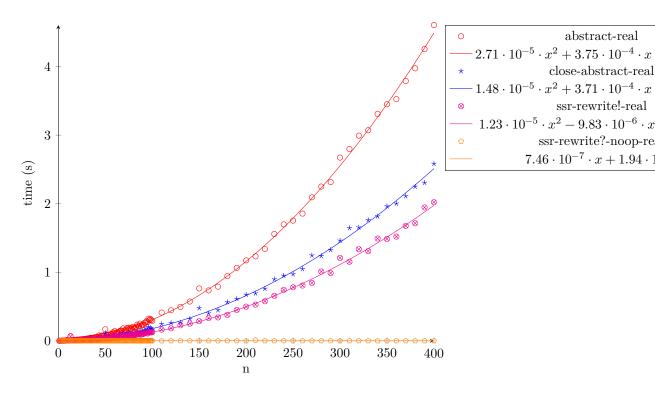
 $Figure\ 5:\ timing-rewrite-strat-under-binders$ 



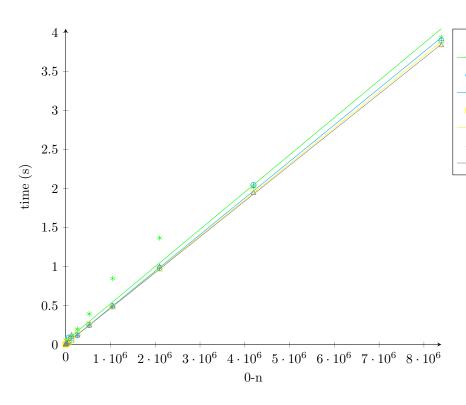
 $Figure \ 6: \ timing-rewrite-repeated-app-autorewrite \\$ 



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



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



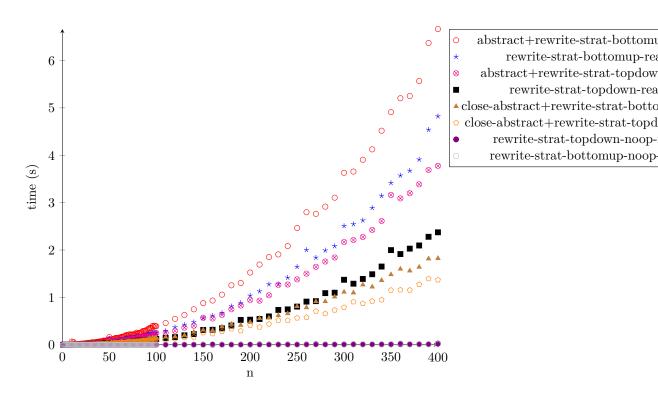
try-ssr-rewrite!-cold-noop-rea  $4.77 \cdot 10^{-7} \cdot x + 4.6 \cdot 10^{-2}$ 

try-ssr-rewrite-noop-real  $4.68 \cdot 10^{-7} \cdot x + 4.22 \cdot 10^{-3}$  try-ssr-rewrite?-noop-real

 $4.62 \cdot 10^{-7} \cdot x + 3 \cdot 10^{-3}$  try-ssr-rewrite!-noop-real

 $4.58 \cdot 10^{-7} \cdot x + 4.78 \cdot 10^{-3}$ 

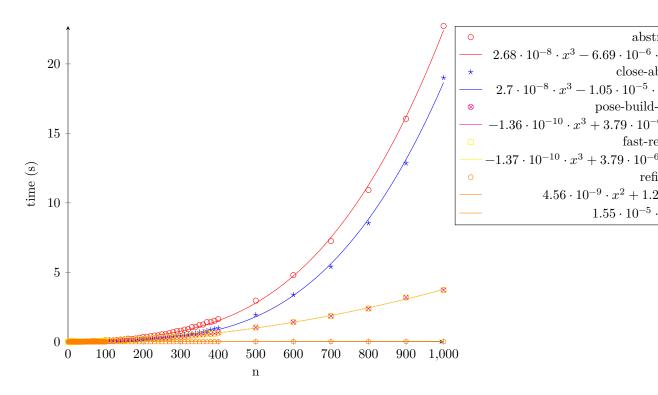
Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn  $\ 1$ 



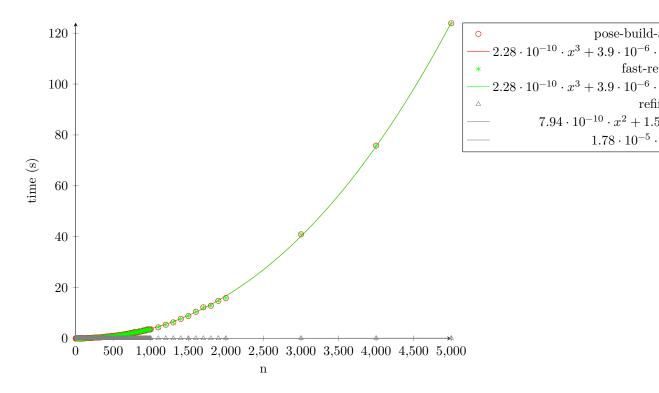
rewrite-strat-bottomup-rea

rewrite-strat-topdown-rea

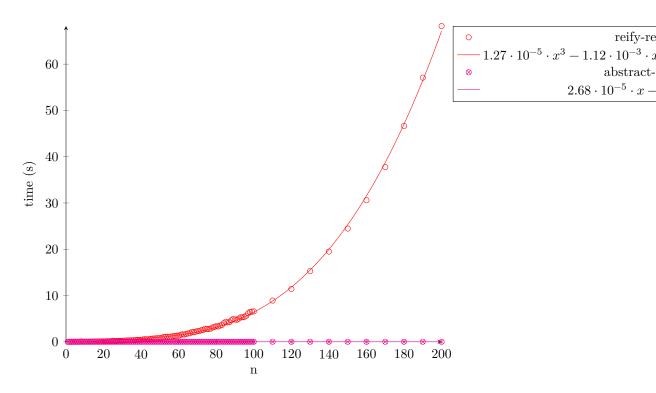
 $Figure~10:~timing\mbox{-rewrite-repeated-app-rewrite-strat}$ 



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



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



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

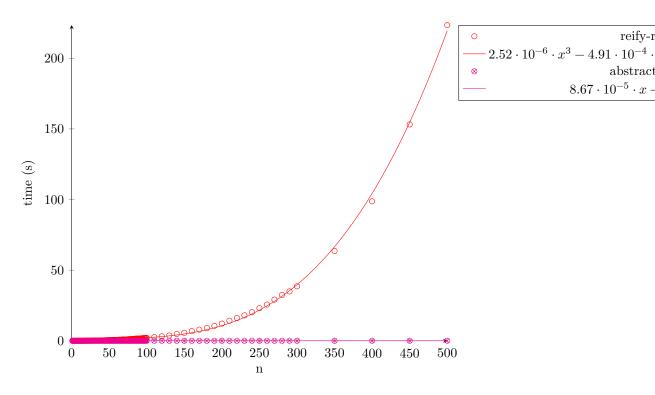


Figure 14: timing-typeclass-reification-let-in-PHOAS