

Figure 1: timing-pattern

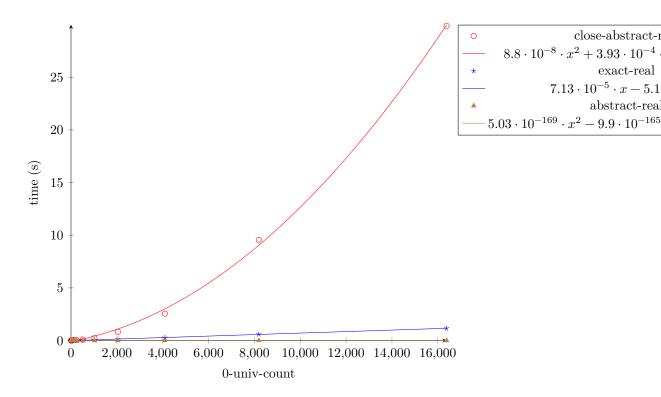


Figure 2: timing-n-polymorphic-universes param-1-n  $\,0\,$ 

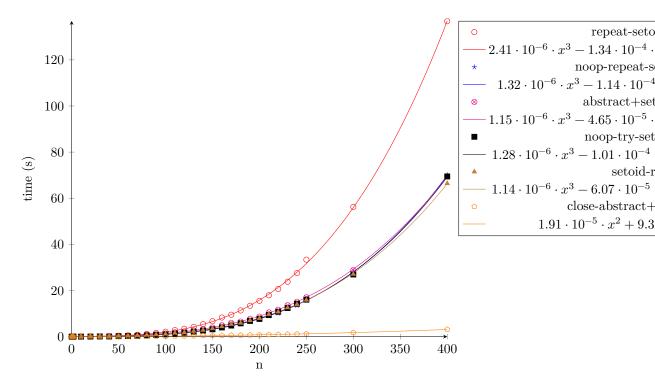
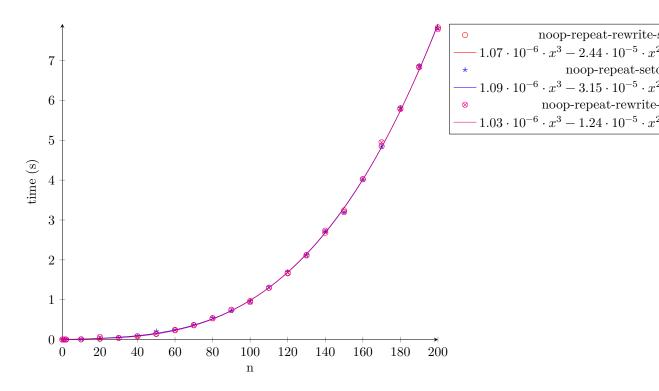
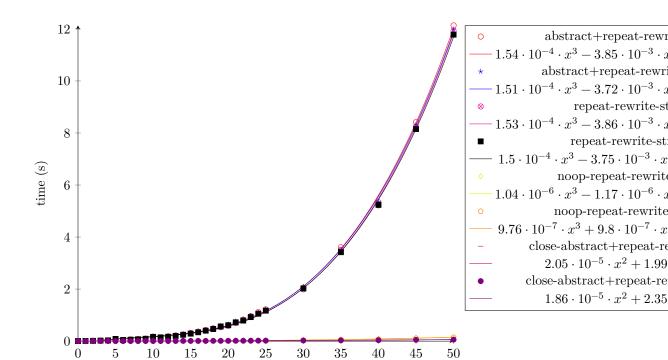


Figure 3: timing-repeat-setoid-rewrite-under-binders

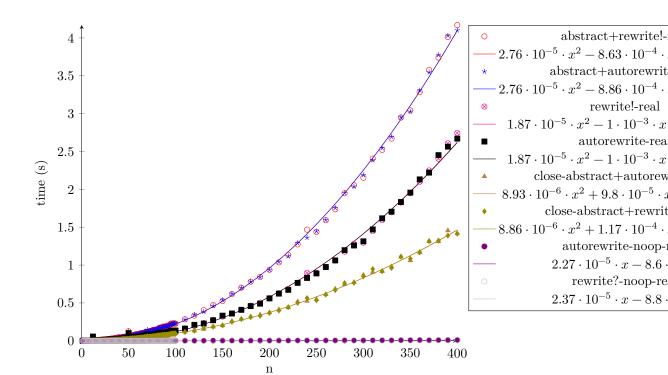


 $Figure \ 4: \ timing-repeat-setoid-rewrite-under-binders-noop \\$ 

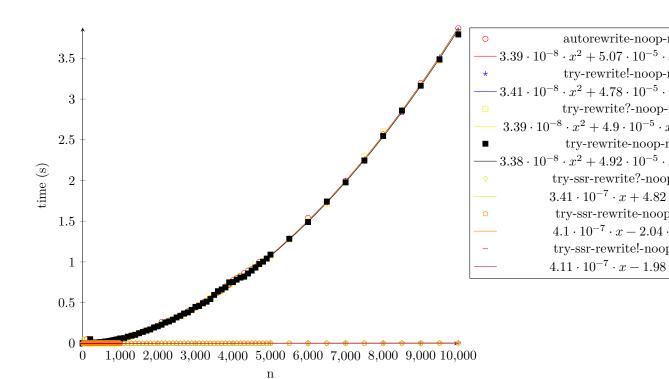


 $Figure \ 5: \ timing-rewrite-strat-under-binders$ 

 $\mathbf{n}$ 



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



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

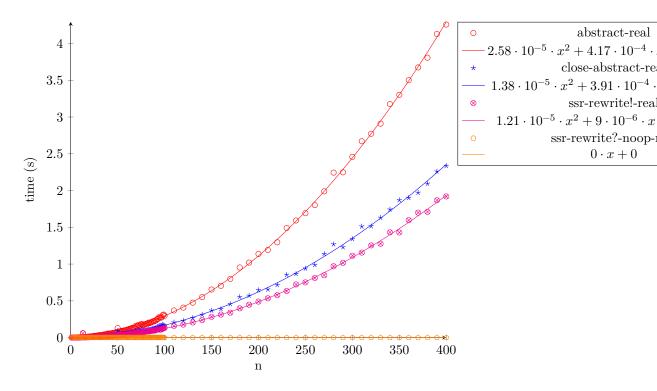
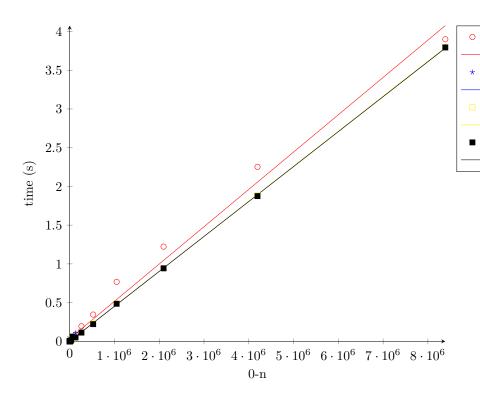


Figure 8: timing-rewrite-repeated-app-ssrrewrite



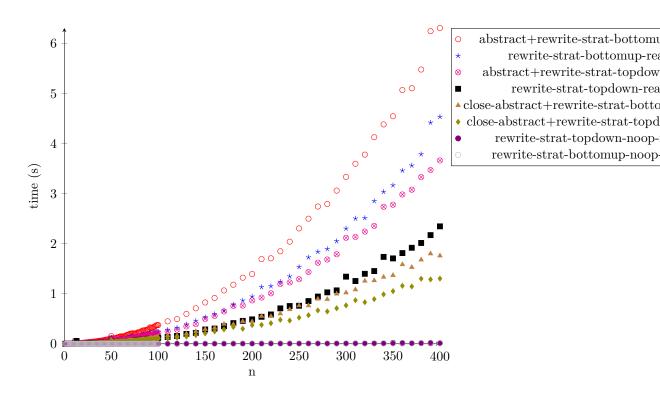
try-ssr-rewrite!-cold-noop-rea  $4.82 \cdot 10^{-7} \cdot x + 3.49 \cdot 10^{-2}$ try-ssr-rewrite!-noop-real

 $\begin{array}{l} 4.51\cdot 10^{-7}\cdot x + 3.06\cdot 10^{-3}\\ \text{try-ssr-rewrite?-noop-real} \end{array}$ 

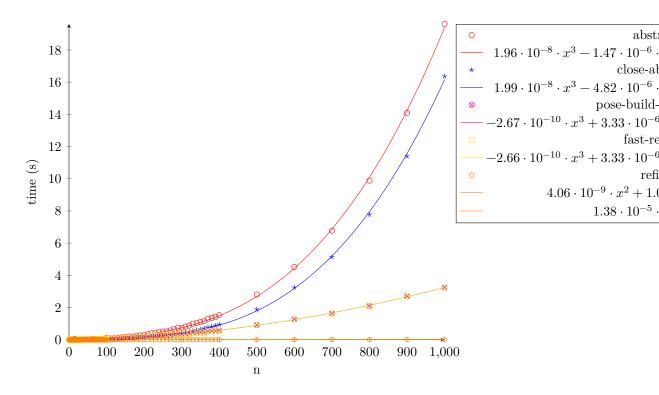
 $4.52 \cdot 10^{-7} \cdot x + 7.11 \cdot 10^{-5}$  try-ssr-rewrite-noop-real

 $4.51\cdot 10^{-7}\cdot x - 4.85\cdot 10^{-5}$ 

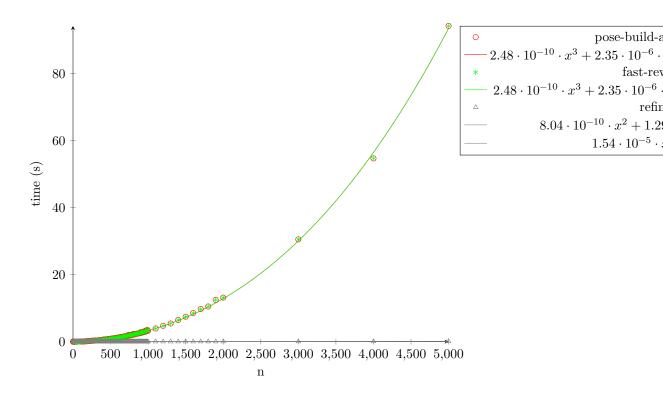
Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn  $\,1\,$ 



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



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



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

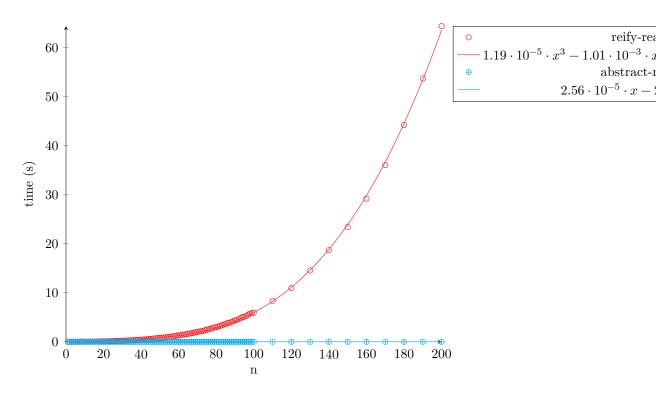
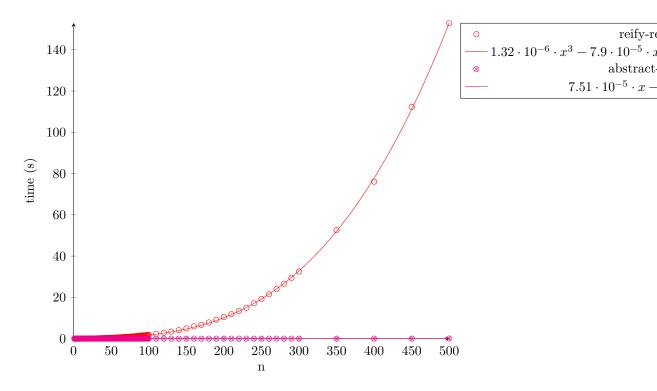


Figure 13: timing-typeclass-reification-let-in-HOAS



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