

Figure 1: timing-pattern

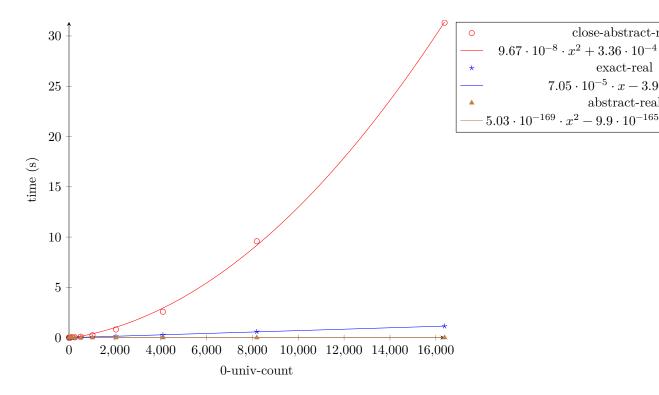
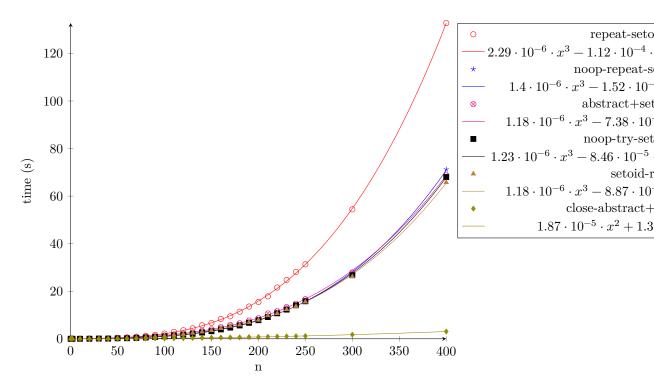


Figure 2: timing-n-polymorphic-universes param-1-n $\,0\,$



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

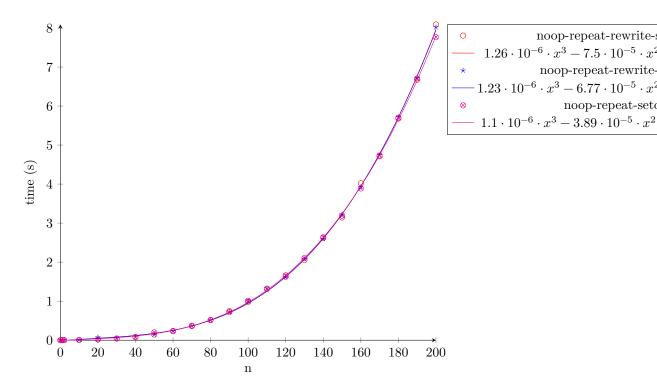
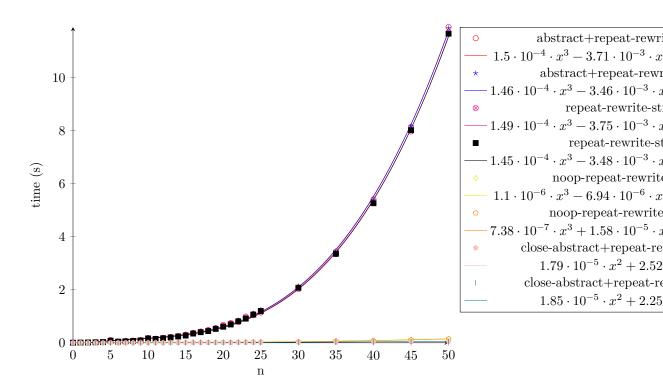
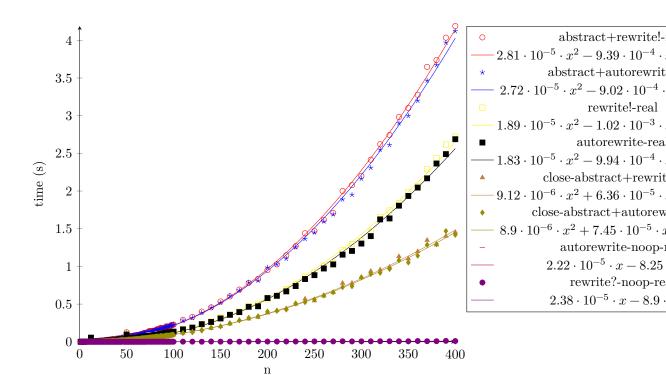


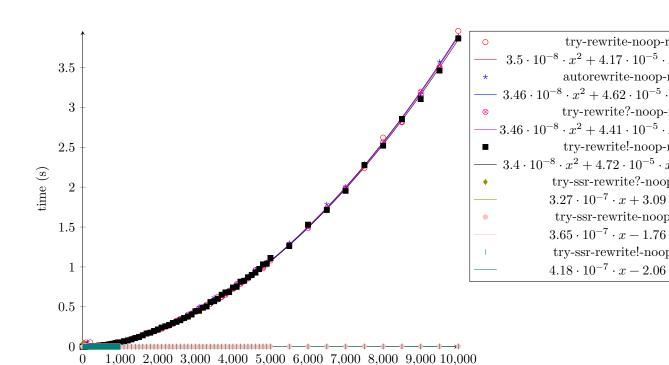
Figure 4: timing-repeat-setoid-rewrite-under-binders-noop



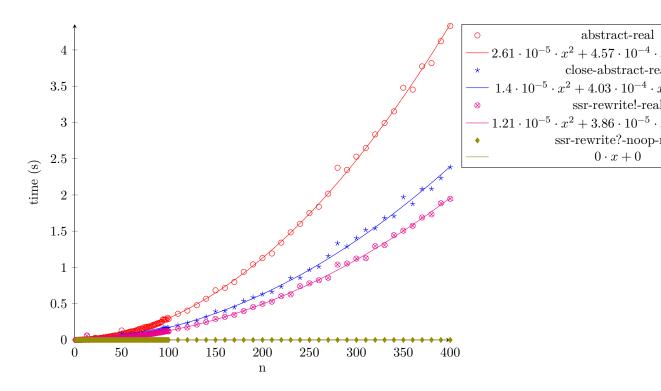
 $Figure\ 5:\ timing-rewrite-strat-under-binders$



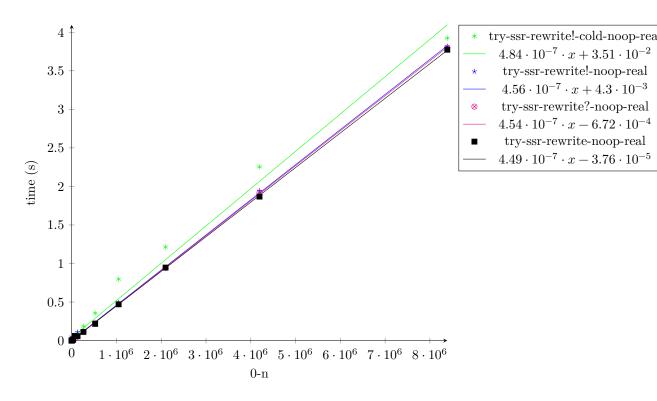
 $Figure \ 6: \ timing-rewrite-repeated-app-autorewrite \\$



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



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



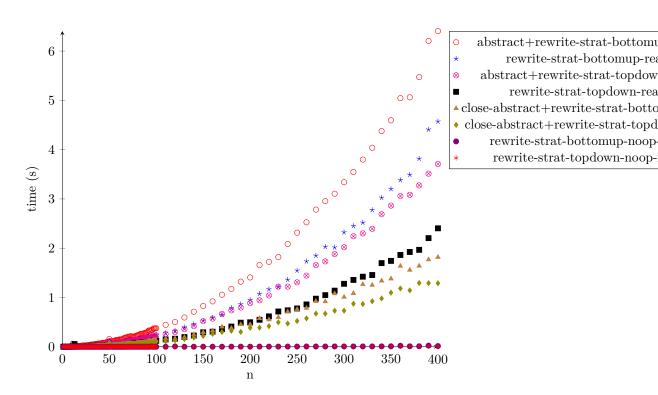
 $4.84 \cdot 10^{-7} \cdot x + 3.51 \cdot 10^{-2}$ try-ssr-rewrite!-noop-real

 $4.56\cdot 10^{-7}\cdot x + 4.3\cdot 10^{-3}$ try-ssr-rewrite?-noop-real

 $4.54 \cdot 10^{-7} \cdot x - 6.72 \cdot 10^{-4}$ try-ssr-rewrite-noop-real

 $4.49 \cdot 10^{-7} \cdot x - 3.76 \cdot 10^{-5}$

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



rewrite-strat-bottomup-rea

rewrite-strat-topdown-rea

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

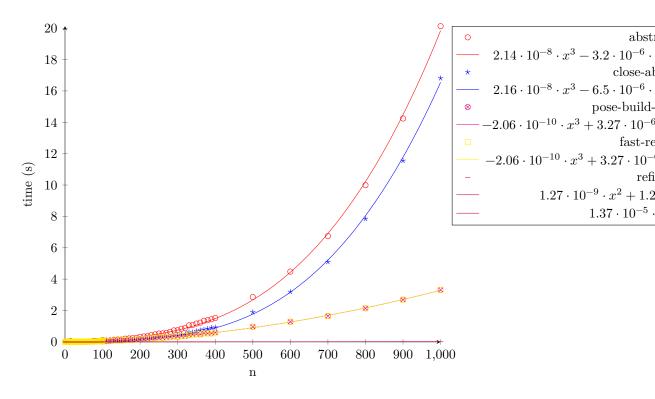
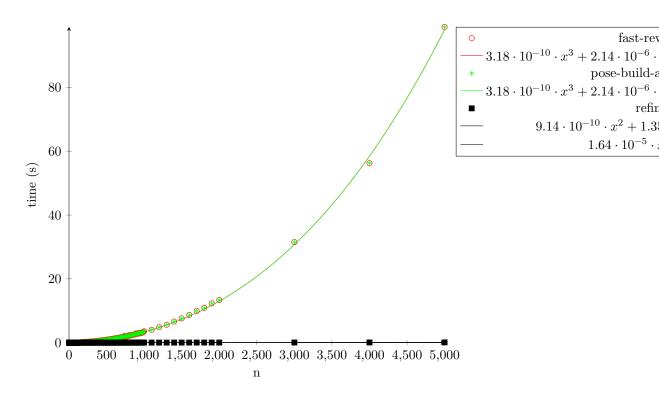
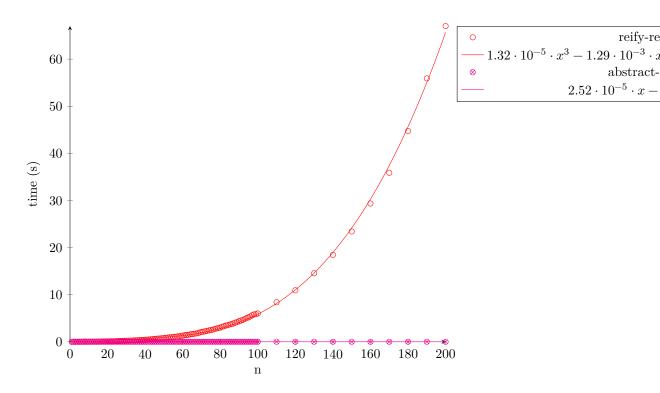


Figure 11: timing-rewrite-repeated-app-fast-rewrite



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



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

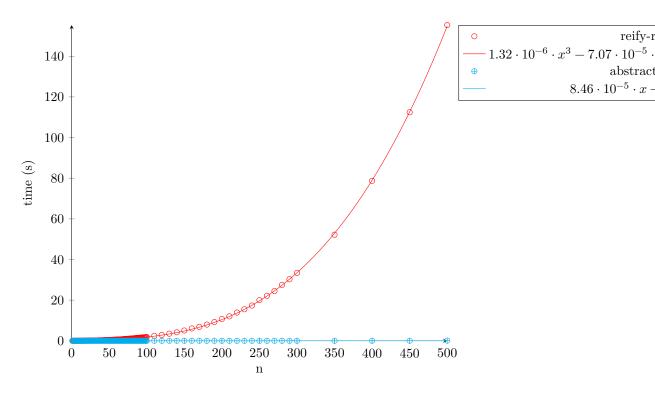


Figure 14: timing-typeclass-reification-let-in-PHOAS