

Figure 1: timing-pattern

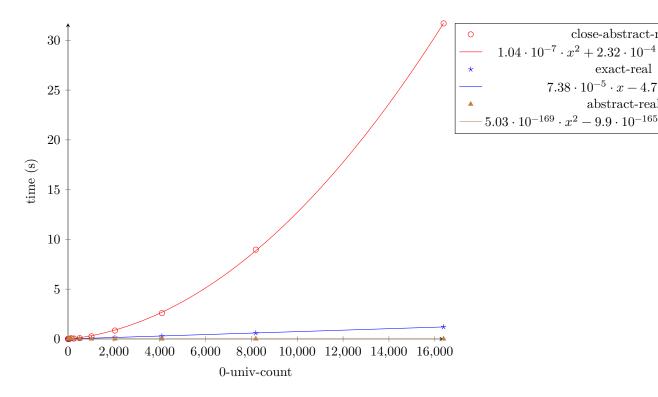
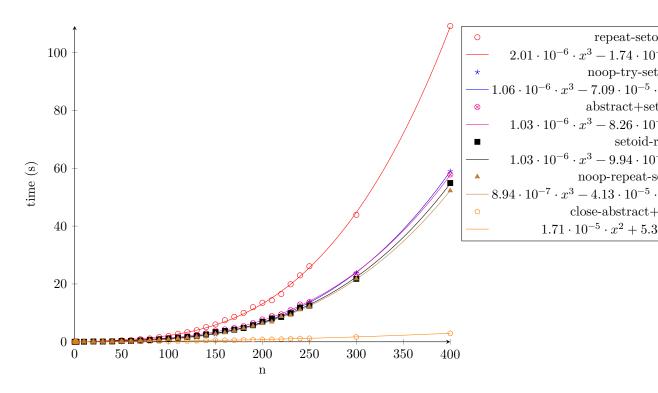


Figure 2: timing-n-polymorphic-universes param-1-n $\,0\,$



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

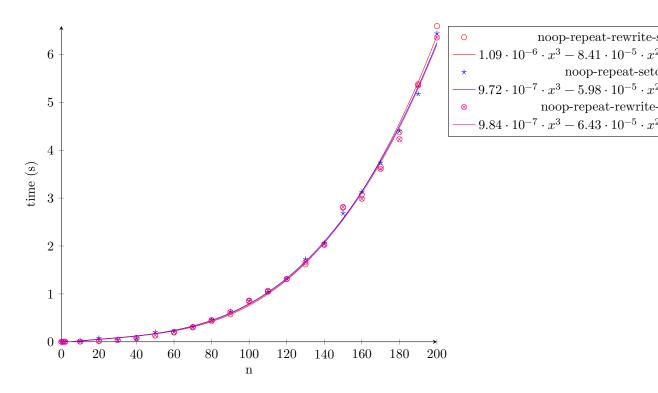


Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

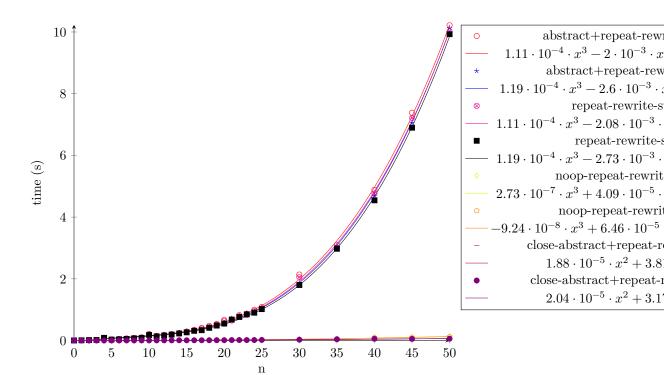
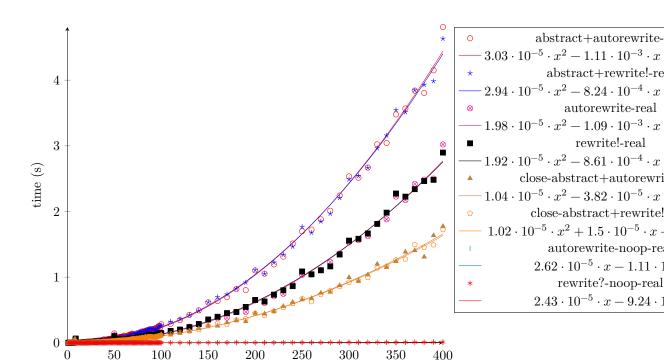
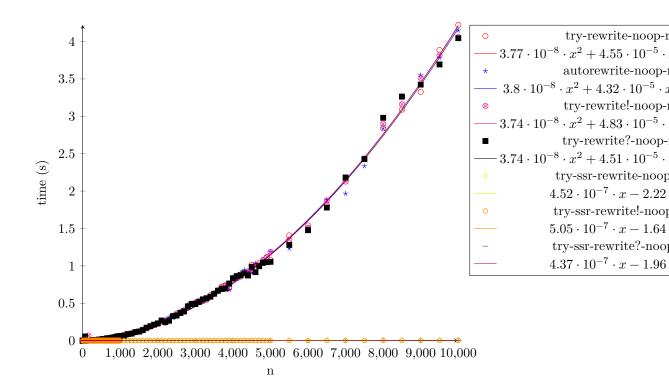


Figure 5: timing-rewrite-strat-under-binders

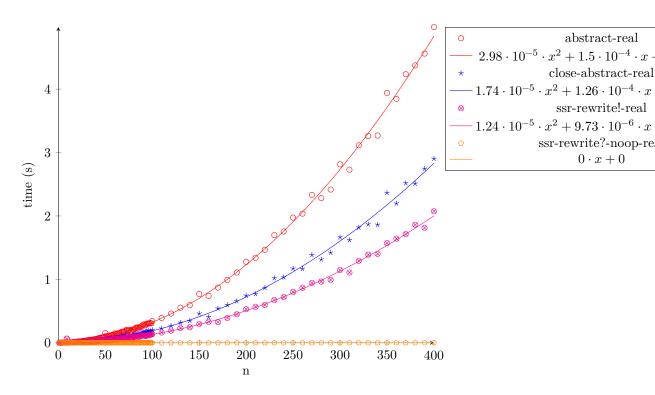


 $Figure \ 6: \ timing-rewrite-repeated-app-autorewrite \\$

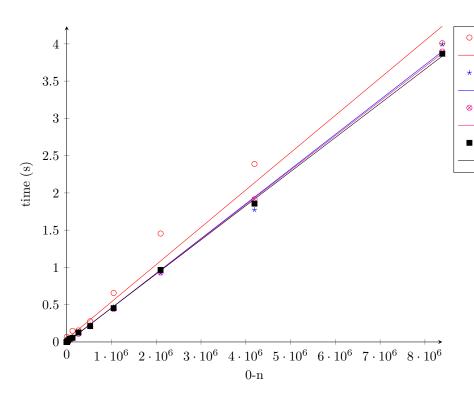
n



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



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



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

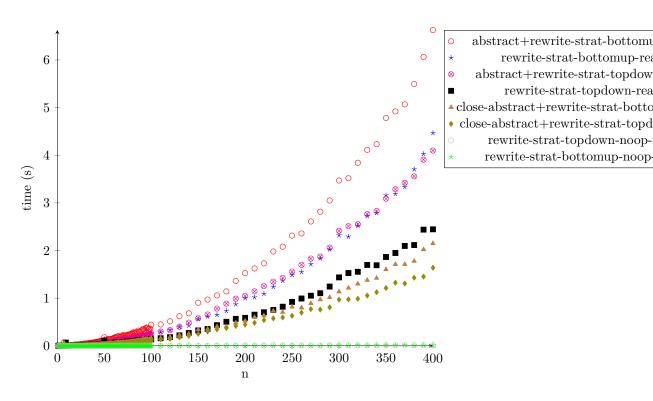
 $5.01 \cdot 10^{-7} \cdot x + 3.68 \cdot 10^{-2}$ try-ssr-rewrite?-noop-real

 $\begin{array}{l} 4.66 \cdot 10^{-7} \cdot x - 9.49 \cdot 10^{-3} \\ \text{try-ssr-rewrite-noop-real} \end{array}$

 $\begin{array}{l} 4.62 \cdot 10^{-7} \cdot x - 6.87 \cdot 10^{-3} \\ \text{try-ssr-rewrite!-noop-real} \end{array}$

 $4.58 \cdot 10^{-7} \cdot x - 2.59 \cdot 10^{-3}$

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



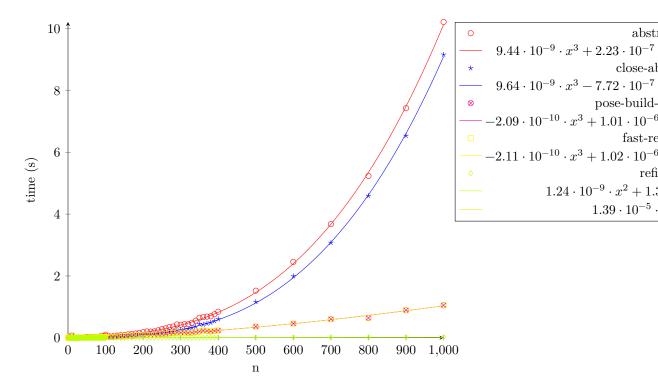
 $abstract + rewrite - strat - bottom \\ \\$ rewrite-strat-bottomup-rea

abstract + rewrite - strat - topdowrewrite-strat-topdown-rea

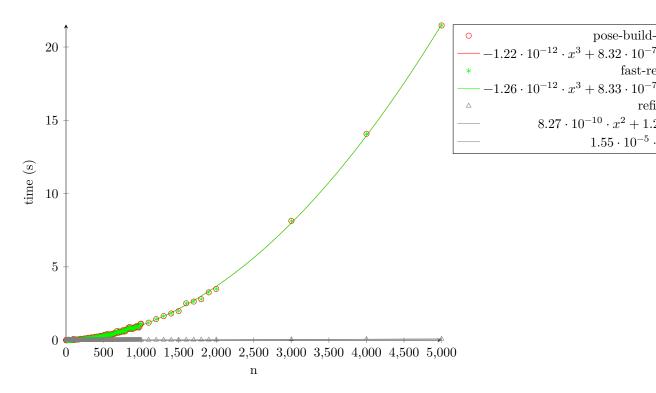
rewrite-strat-topdown-noop-

rewrite-strat-bottomup-noop-

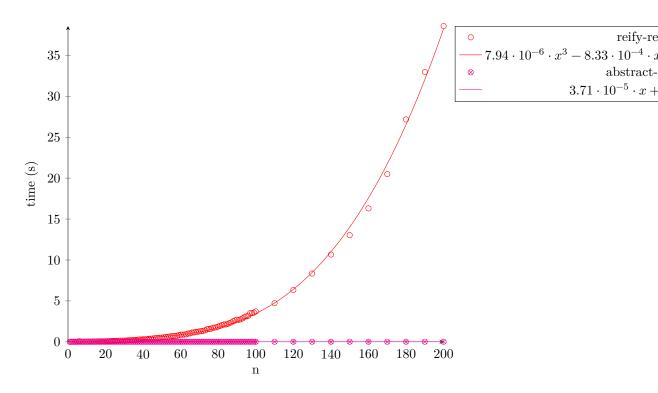
 $Figure~10:~timing\mbox{-rewrite-repeated-app-rewrite-strat}$



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



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



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

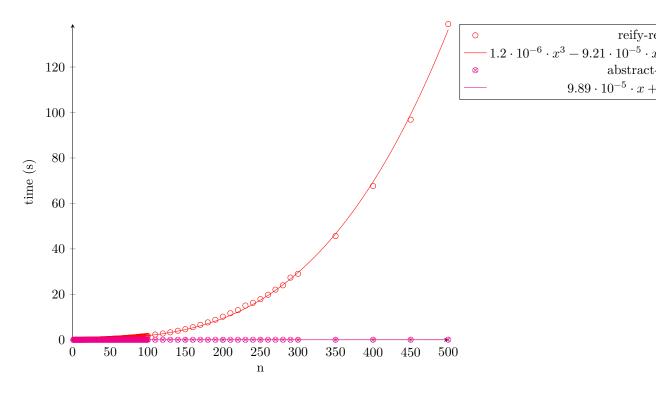


Figure 14: timing-typeclass-reification-let-in-PHOAS