

Figure 1: timing-pattern

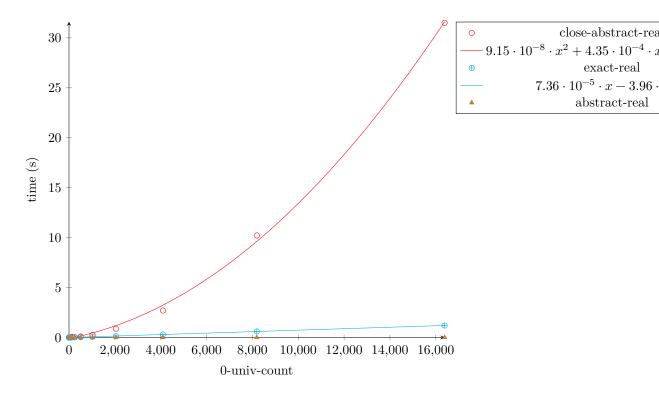
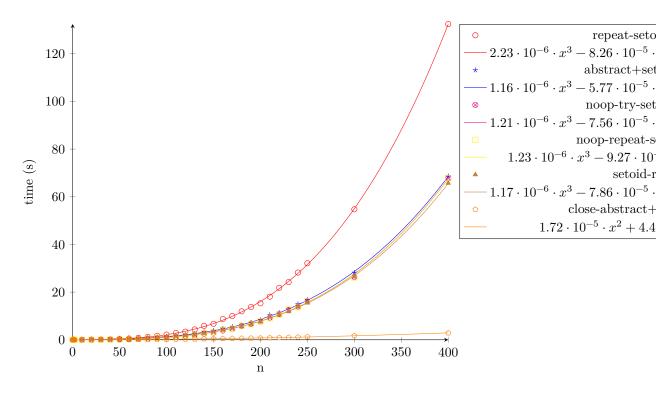


Figure 2: timing-n-polymorphic-universes param-1-n $\,0\,$



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

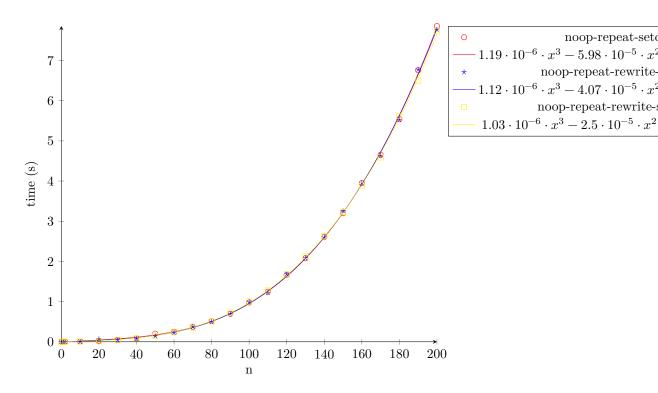
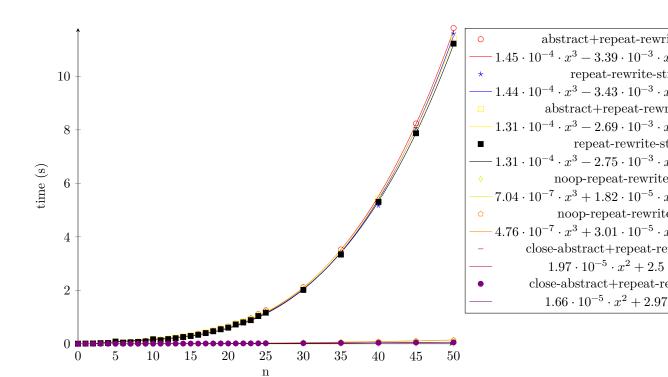
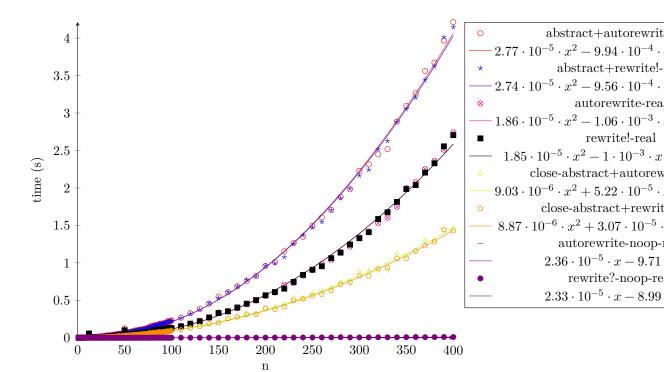


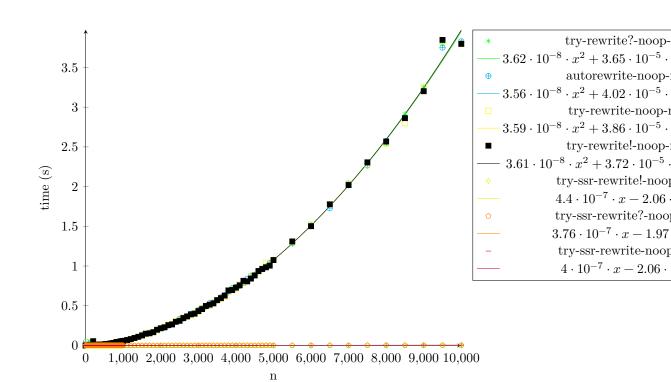
Figure 4: timing-repeat-setoid-rewrite-under-binders-noop



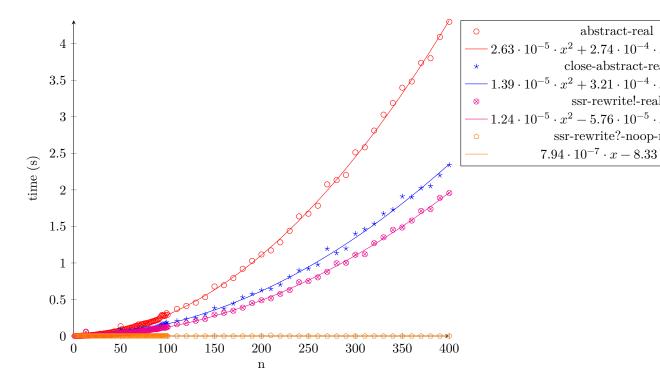
 $Figure\ 5:\ timing-rewrite-strat-under-binders$



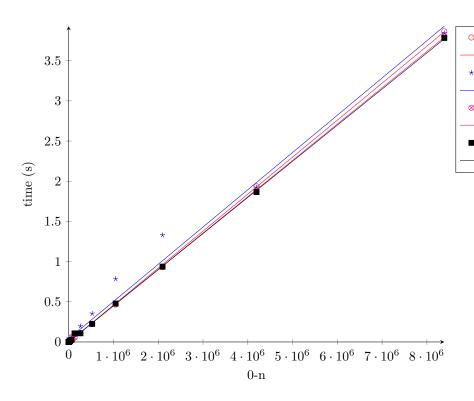
 $Figure \ 6: \ timing-rewrite-repeated-app-autorewrite \\$



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



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



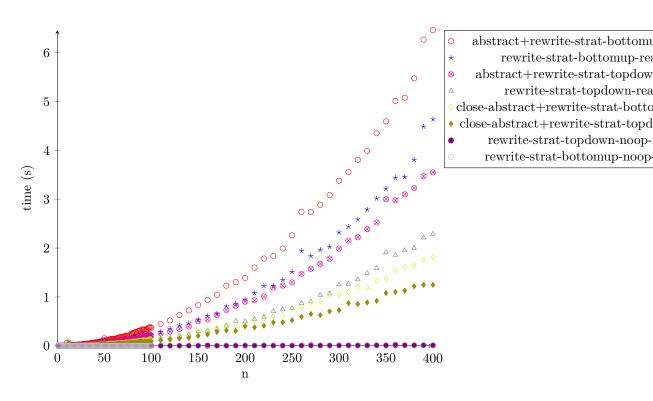
try-ssr-rewrite?-noop-real $4.6\cdot 10^{-7}\cdot x - 2.28\cdot 10^{-3}$

try-ssr-rewrite!-cold-noop-rea $4.64 \cdot 10^{-7} \cdot x + 3.95 \cdot 10^{-2}$

 $\begin{array}{l} \text{try-ssr-rewrite-noop-real} \\ 4.52 \cdot 10^{-7} \cdot x - 1.45 \cdot 10^{-3} \\ \text{try-ssr-rewrite!-noop-real} \end{array}$

 $4.5\cdot 10^{-7}\cdot x + 5.63\cdot 10^{-4}$

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



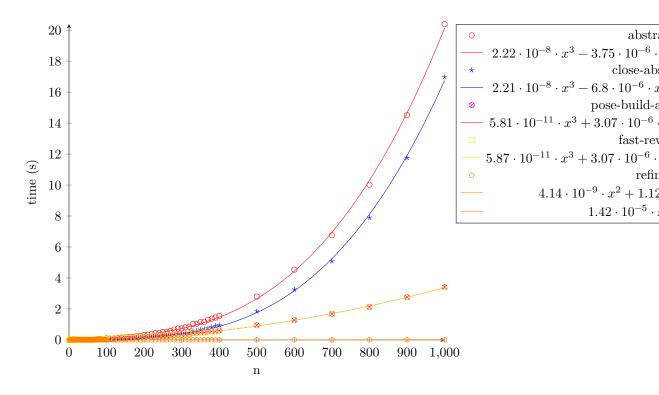
 $abstract + rewrite - strat - bottom \\ \\$

rewrite-strat-bottomup-realabstract + rewrite - strat - topdowrewrite-strat-topdown-rea

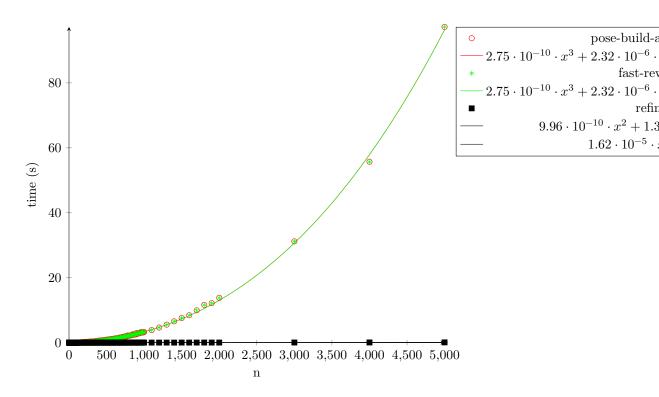
rewrite-strat-topdown-noop-

rewrite-strat-bottomup-noop-

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



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



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

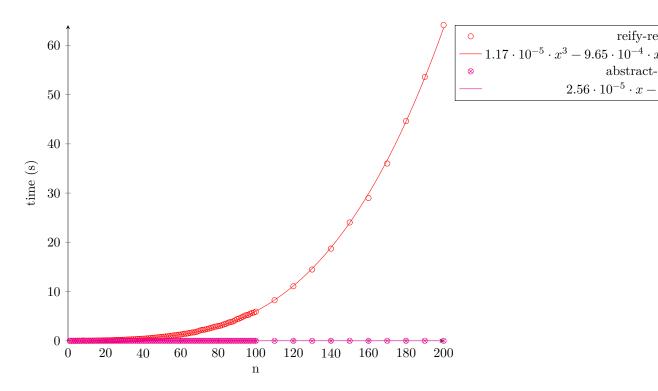
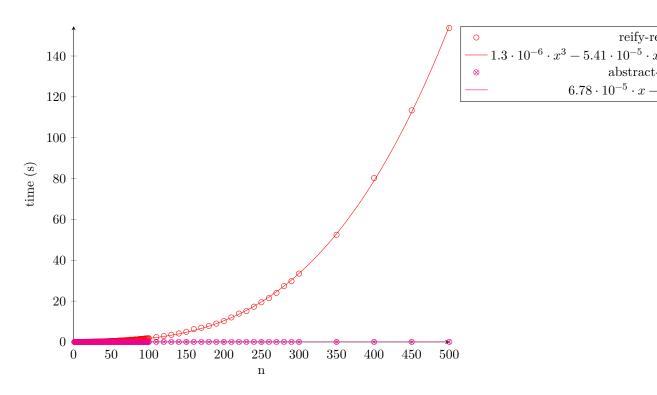


Figure 13: timing-typeclass-reification-let-in-HOAS



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