

Figure 1: timing-pattern

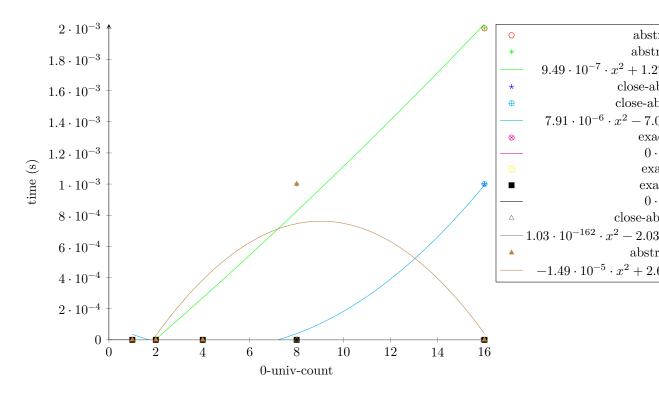


Figure 2: timing-n-polymorphic-universes param-1-n $\,0\,$

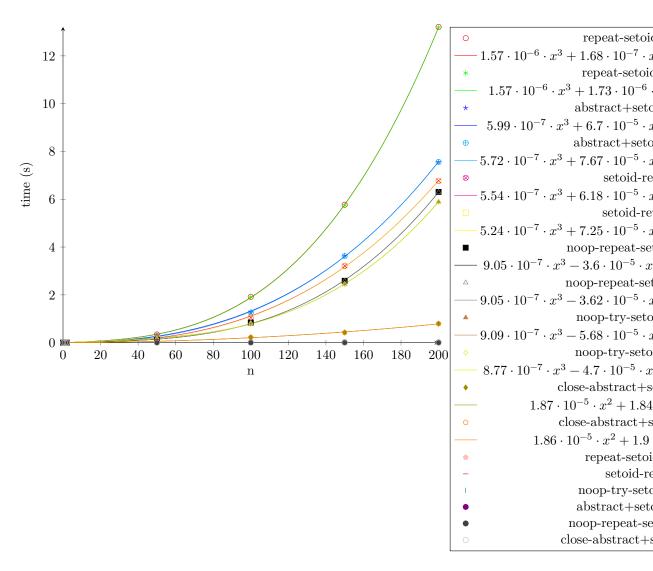


Figure 3: timing-repeat-setoid-rewrite-under-binders

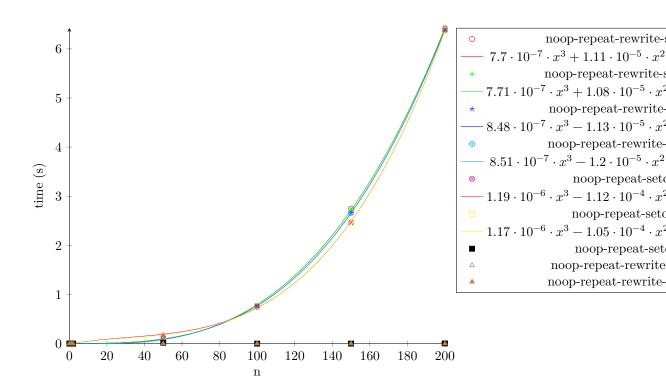


Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

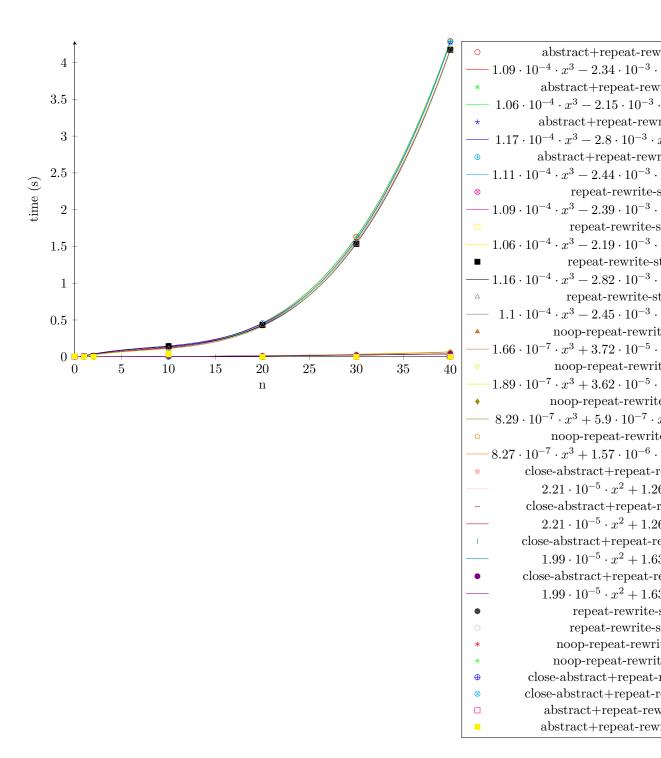


Figure 5: timing-rewrite-strat-under-binders

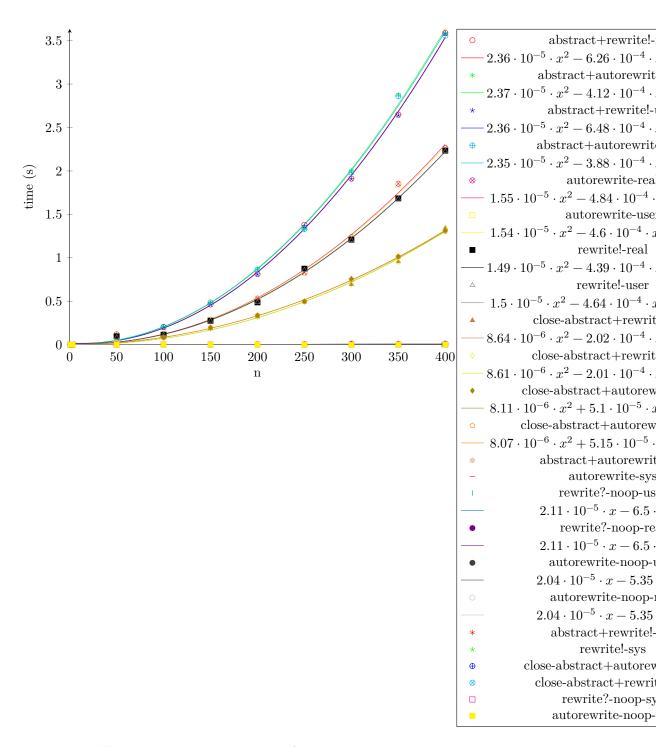


Figure 6: timing-rewrite-repeated-app-autorewrite

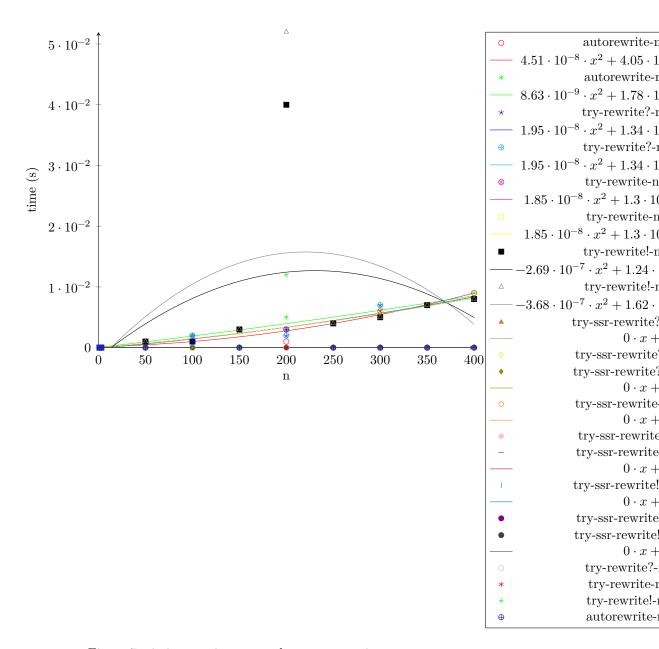
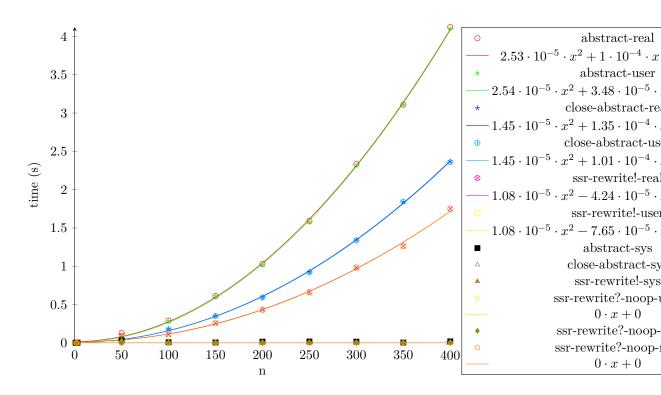


Figure 7: timing-rewrite-repeated-app-autorewrite-noop



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

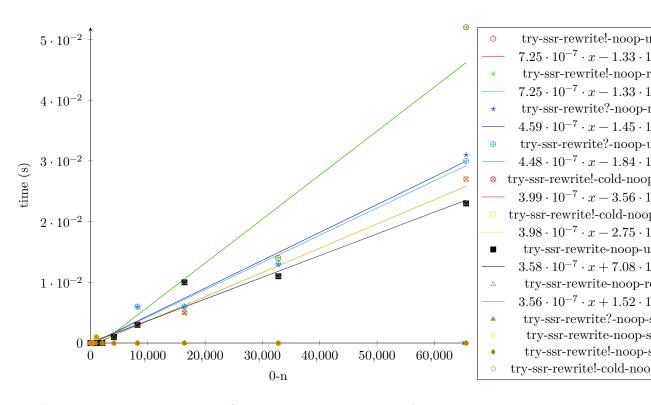


Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn $\,1\,$

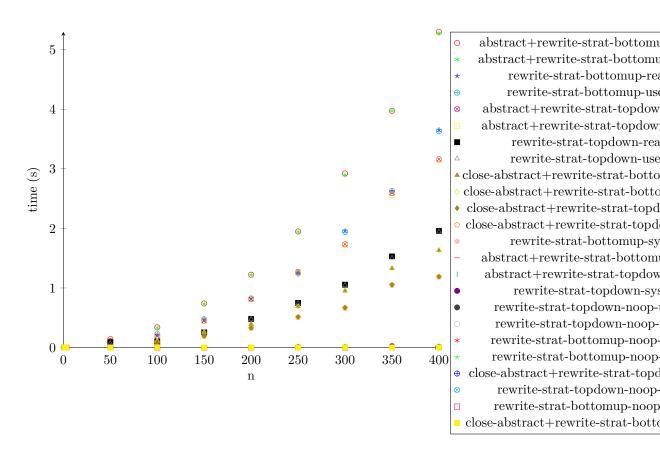


Figure 10: timing-rewrite-repeated-app-rewrite-strat

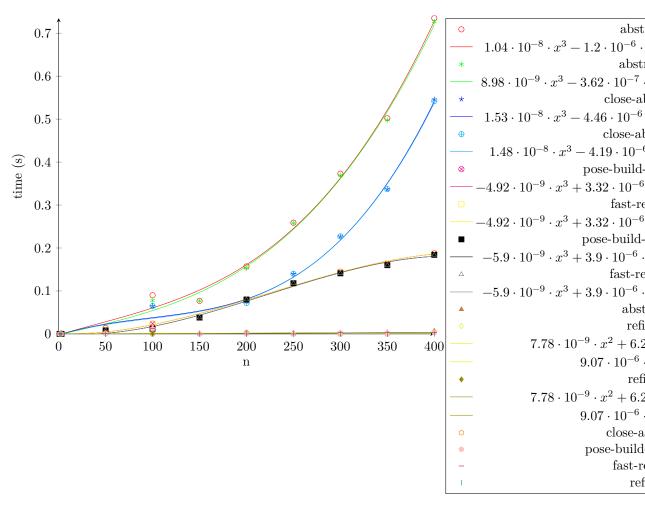
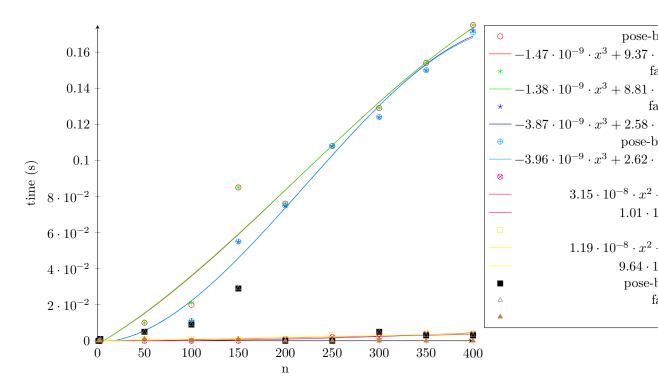
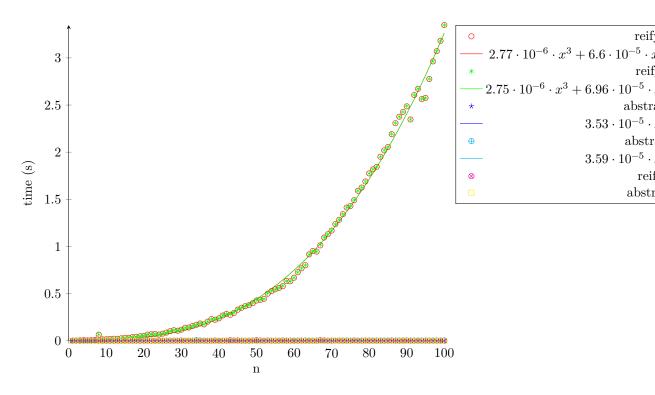


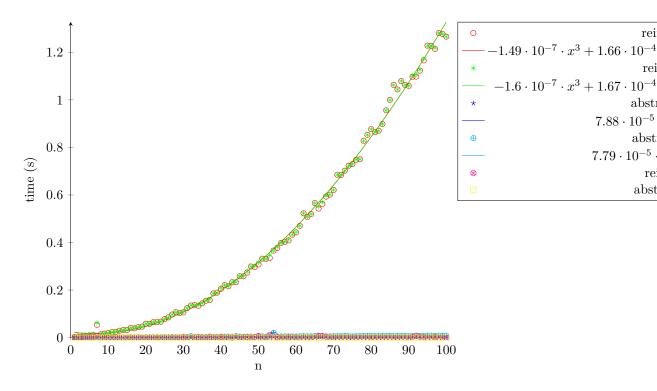
Figure 11: timing-rewrite-repeated-app-fast-rewrite



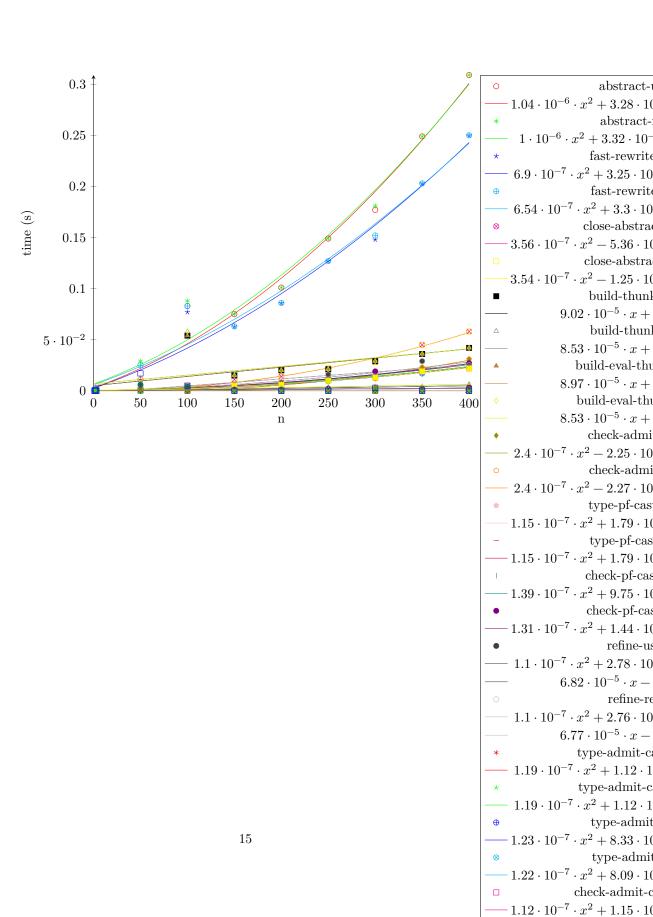
 ${\bf Figure~12:~timing-rewrite-repeated-app-fast-rewrite-no-abstract}$



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



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



abstract-

abstract-

fast-rewrite

fast-rewrite

close-abstrac

close-abstra

build-thunk $9.02 \cdot 10^{-5} \cdot x +$ build-thunl

 $8.53 \cdot 10^{-5} \cdot x +$ build-eval-thu $8.97 \cdot 10^{-5} \cdot x +$

build-eval-thu

check-admi

check-admi

type-pf-cas

type-pf-cas

check-pf-cas

check-pf-cas

 $6.82 \cdot 10^{-5} \cdot x -$

 $6.77\cdot 10^{-5}\cdot x$ type-admit-ca

type-admit-c

type-admit

type-admit

check-admit-c

check-admit-o

 $1.12 \cdot 10^{-7} \cdot x^2 + 1.15 \cdot 10^{-7}$

refine-us

refine-re

 $8.53 \cdot 10^{-5} \cdot x +$