

Figure 1: timing-pattern

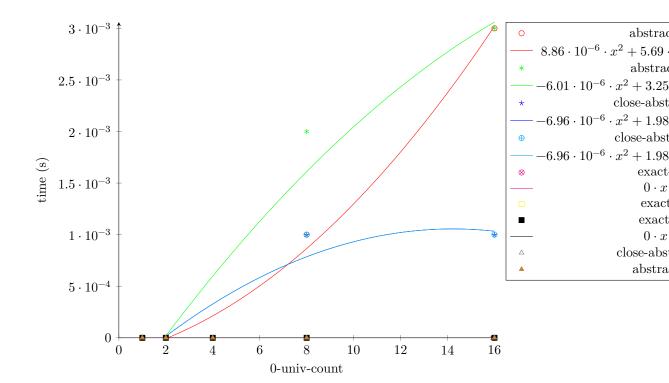


Figure 2: timing-n-polymorphic-universes param-1-n $\,0$

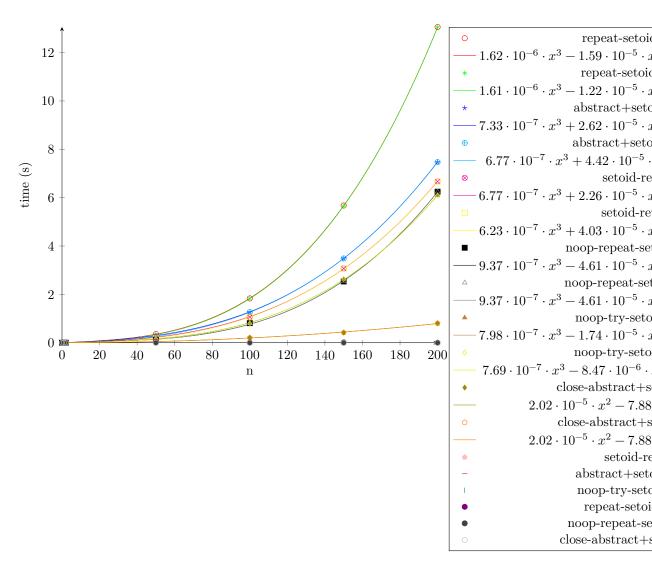


Figure 3: timing-repeat-setoid-rewrite-under-binders

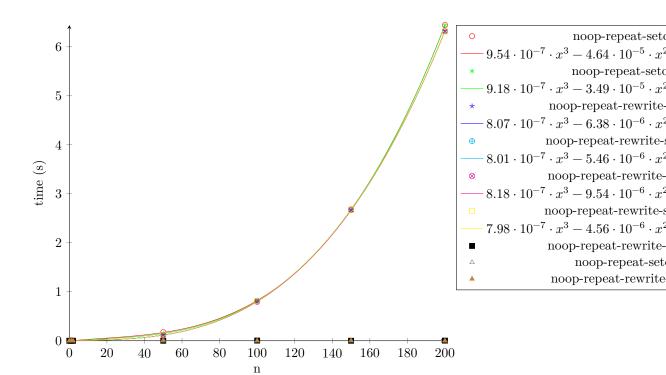


Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

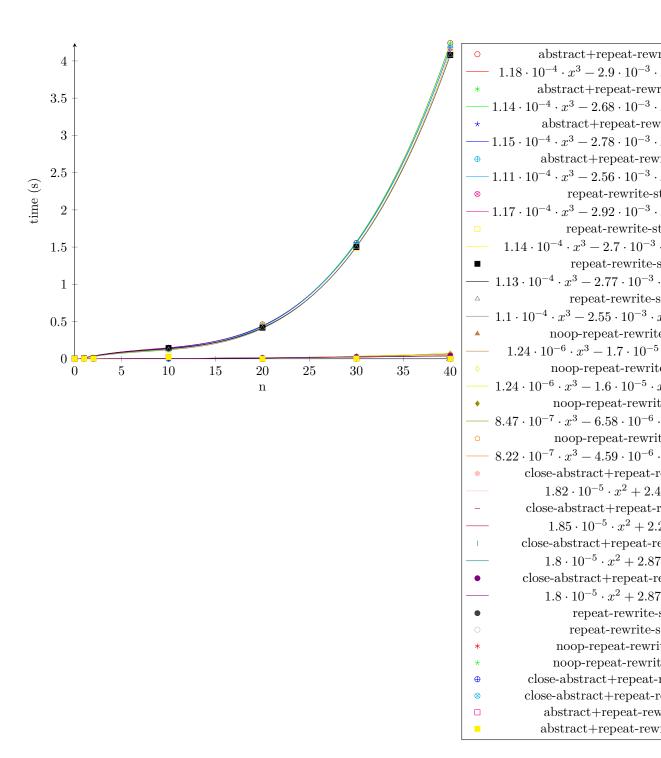
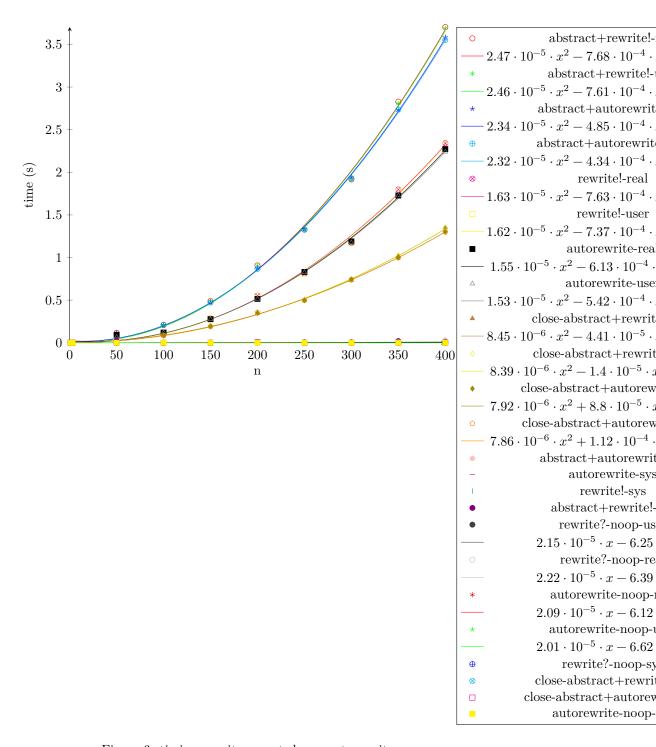


Figure 5: timing-rewrite-strat-under-binders



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

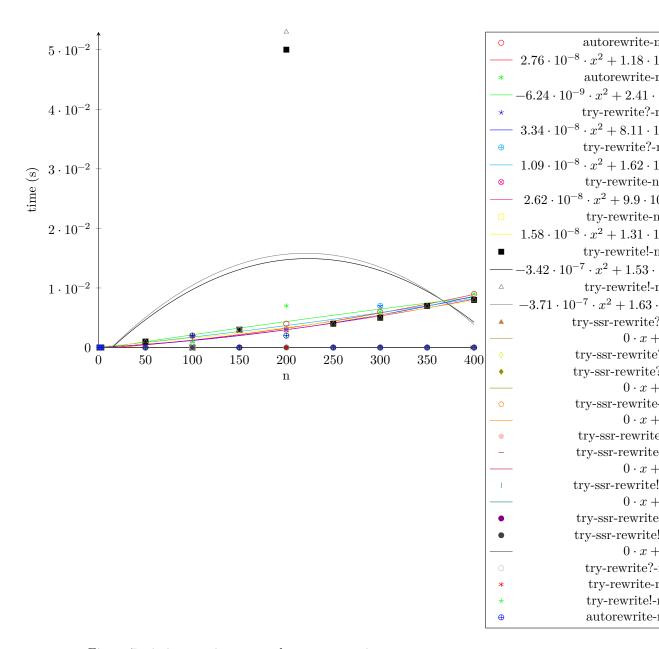


Figure 7: timing-rewrite-repeated-app-autorewrite-noop

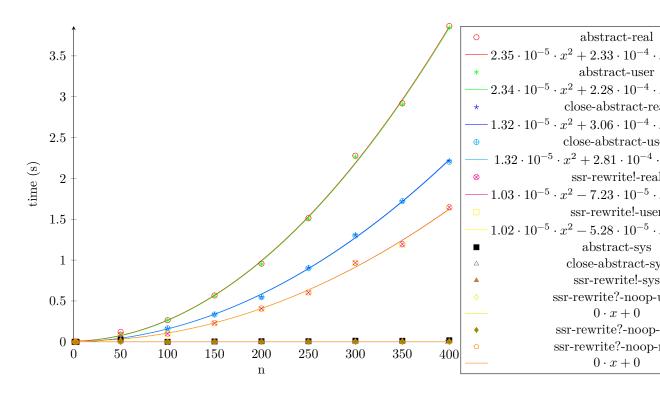


Figure 8: timing-rewrite-repeated-app-ssrrewrite

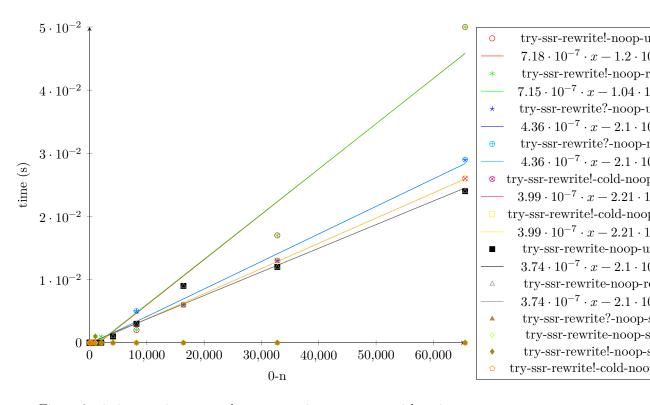


Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn $\ 1$

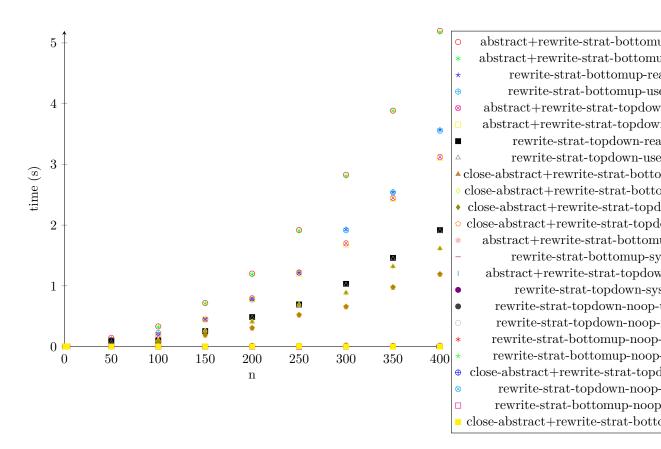


Figure 10: timing-rewrite-repeated-app-rewrite-strat

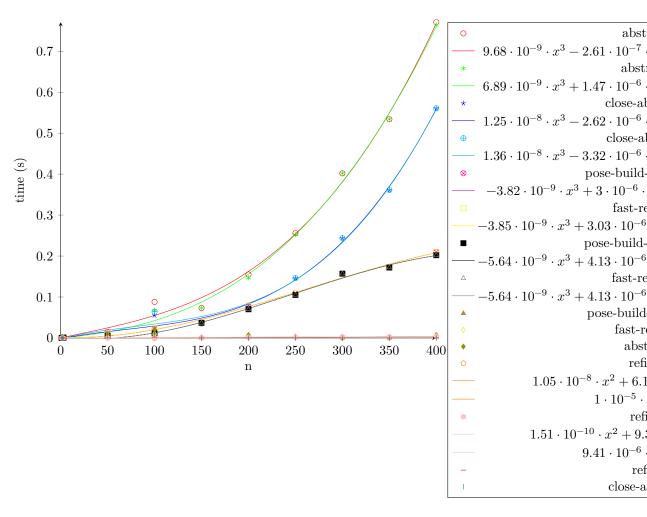
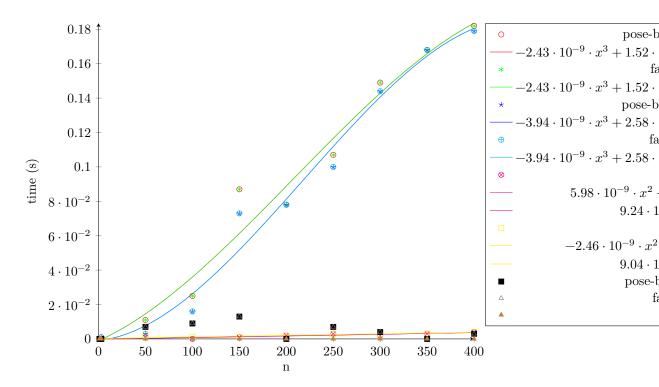
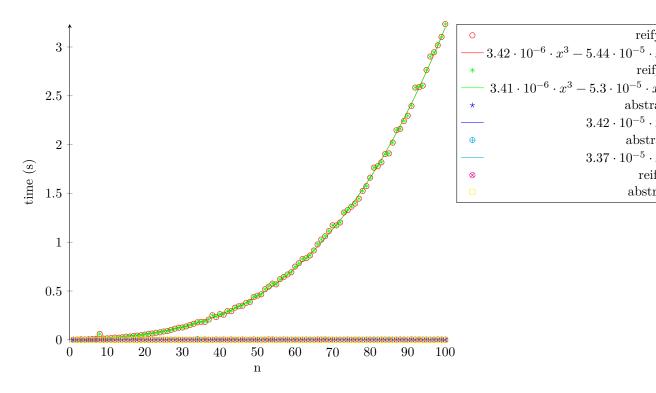


Figure 11: timing-rewrite-repeated-app-fast-rewrite



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



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

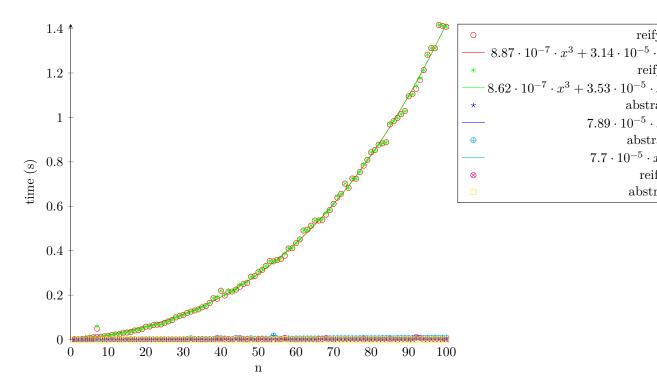
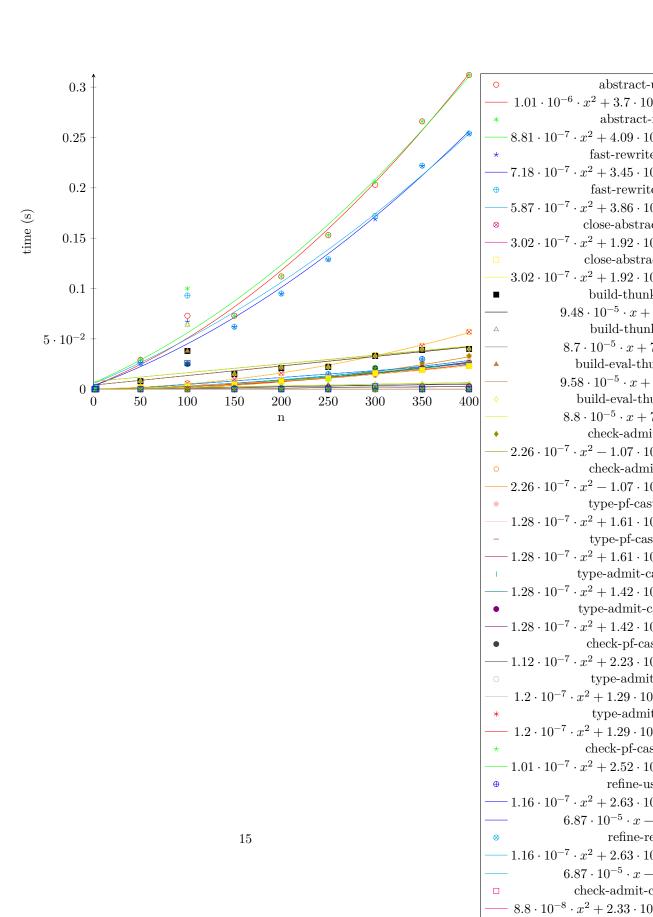


Figure 14: timing-typeclass-reification-let-in-PHOAS



abstract-

abstract-

fast-rewrite

fast-rewrite

close-abstrac

close-abstra

build-thunk $9.48 \cdot 10^{-5} \cdot x +$ build-thunl

 $8.7 \cdot 10^{-5} \cdot x + 7$ build-eval-thu $9.58 \cdot 10^{-5} \cdot x +$

build-eval-thu

check-admi

check-admi

type-pf-cas

type-pf-cas

type-admit-ca

type-admit-c

check-pf-cas

type-admit

type-admit

check-pf-cas

 $6.87\cdot 10^{-5}\cdot x -$

 $6.87 \cdot 10^{-5} \cdot x$ check-admit-c

check-admit-o

typo I 11

 $8.8 \cdot 10^{-8} \cdot x^2 + 2.33 \cdot 10$

refine-us

refine-re

 $8.8 \cdot 10^{-5} \cdot x + 7$