

Figure 1: timing-pattern

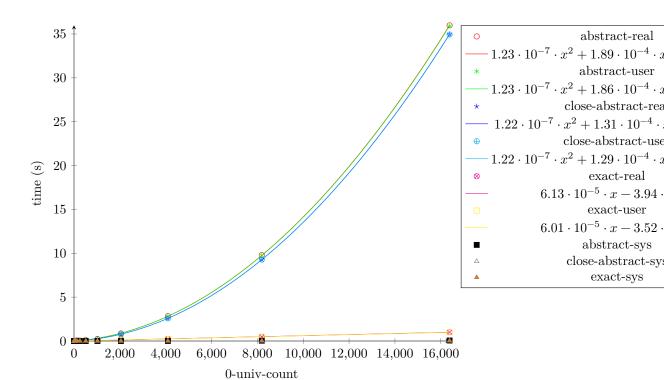


Figure 2: timing-n-polymorphic-universes param-1-n 0

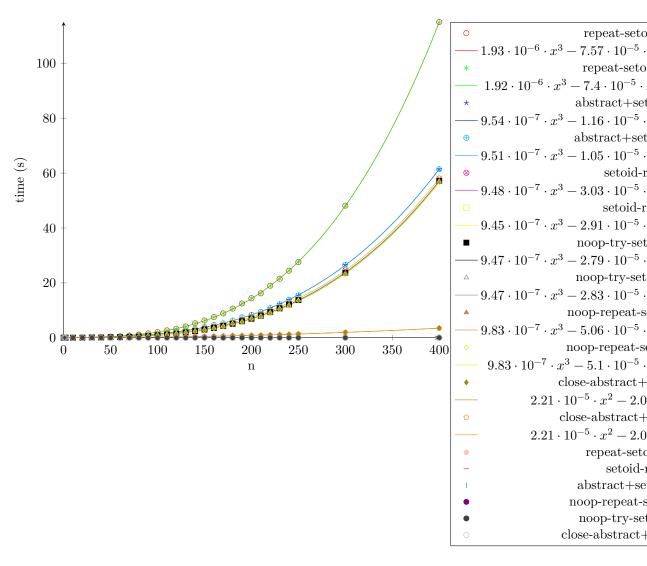


Figure 3: timing-repeat-setoid-rewrite-under-binders

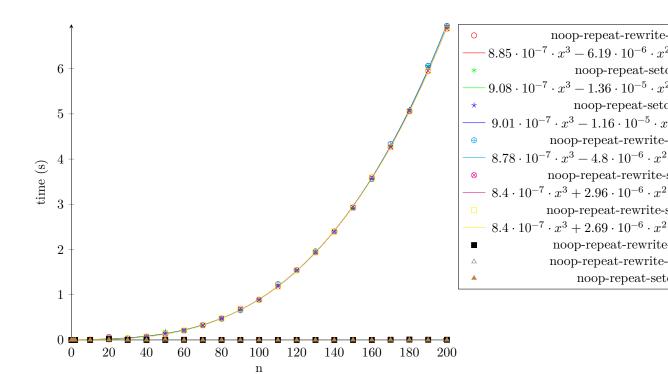


Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

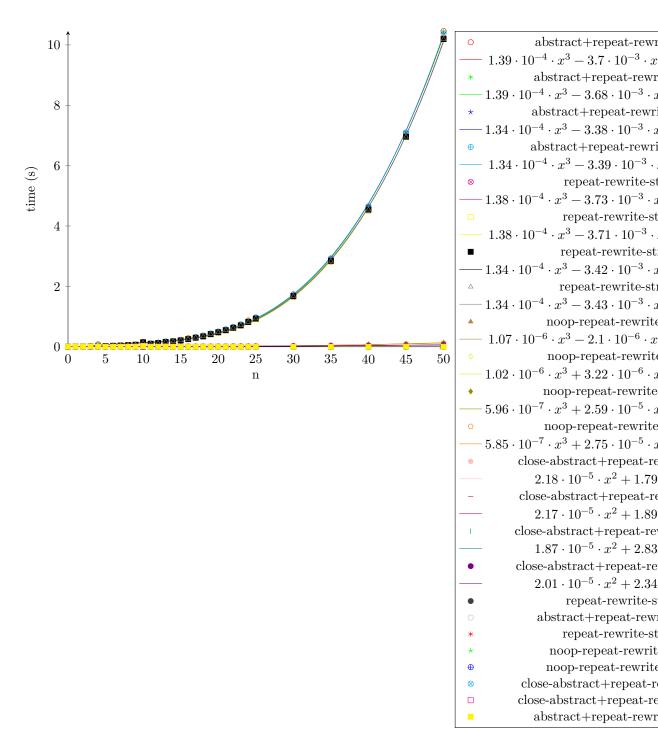


Figure 5: timing-rewrite-strat-under-binders

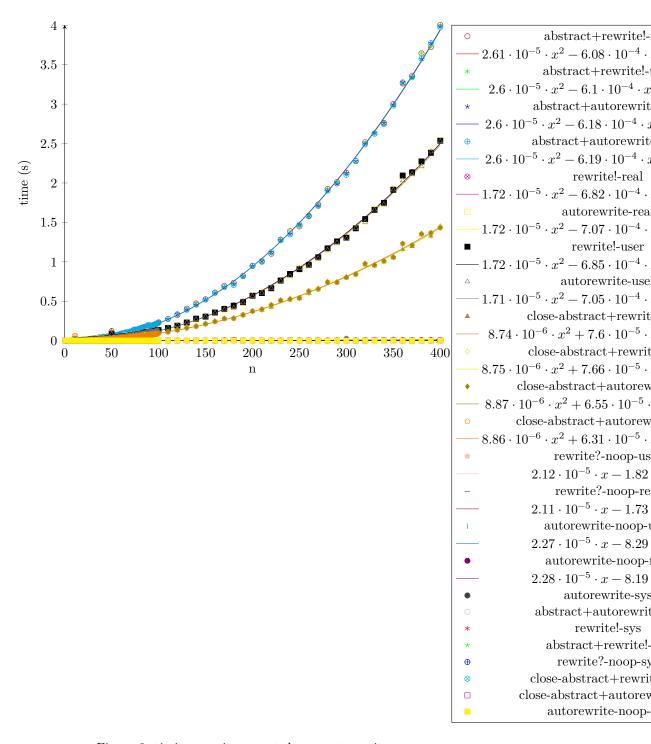


Figure 6: timing-rewrite-repeated-app-autorewrite

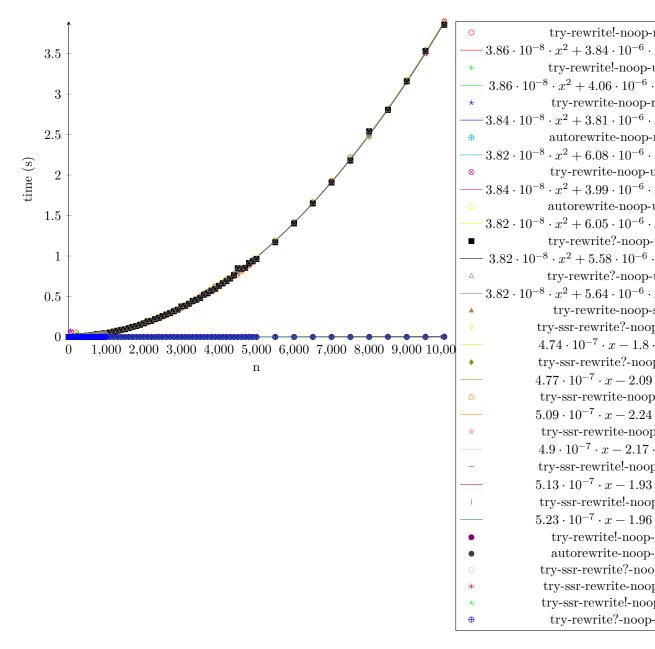


Figure 7: timing-rewrite-repeated-app-autorewrite-noop

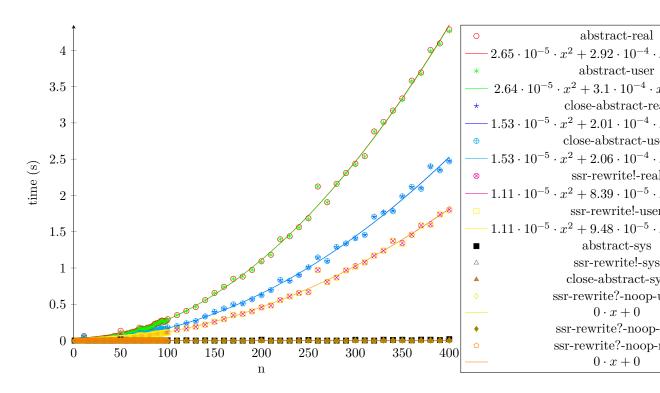


Figure 8: timing-rewrite-repeated-app-ssrrewrite

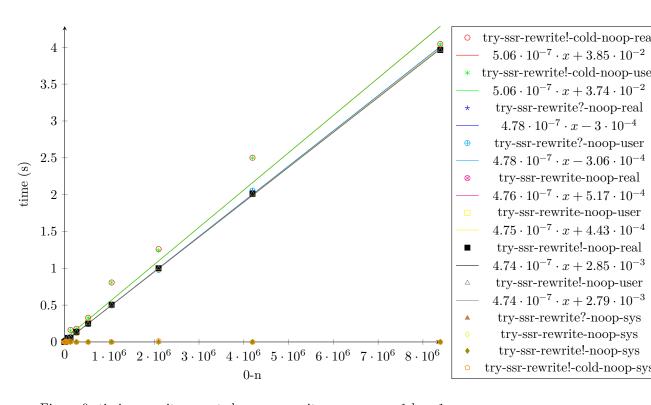


Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn $\ 1$

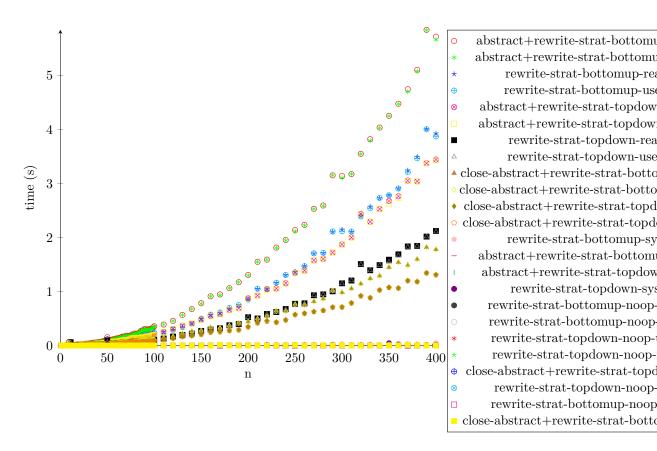
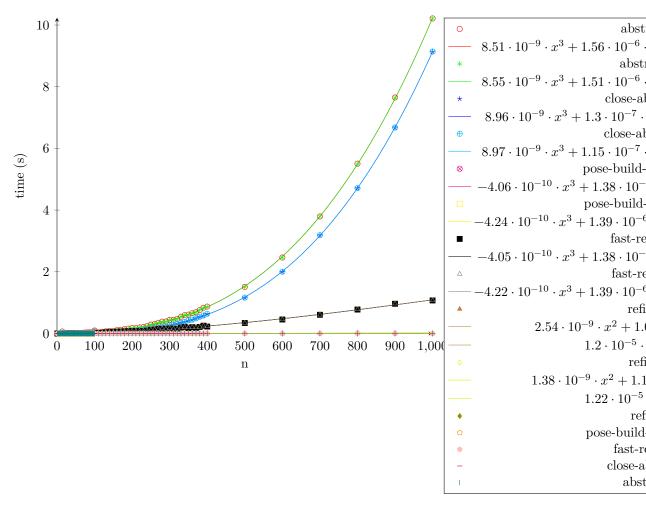
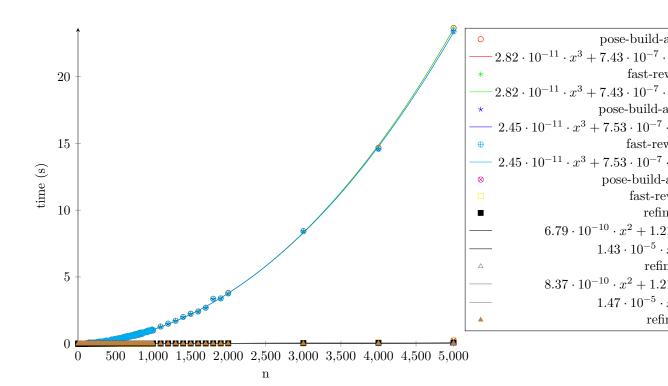


Figure 10: timing-rewrite-repeated-app-rewrite-strat

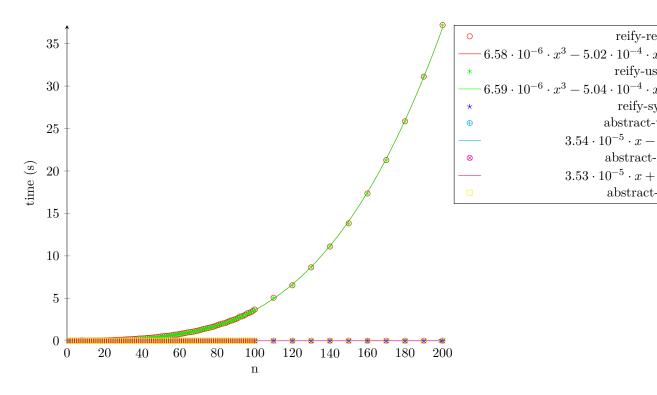


ref

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



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



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

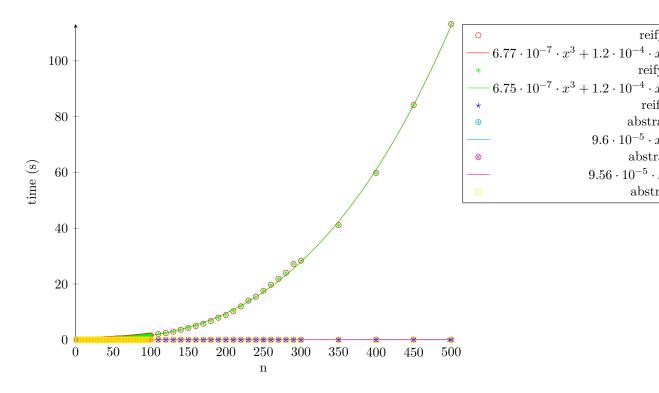
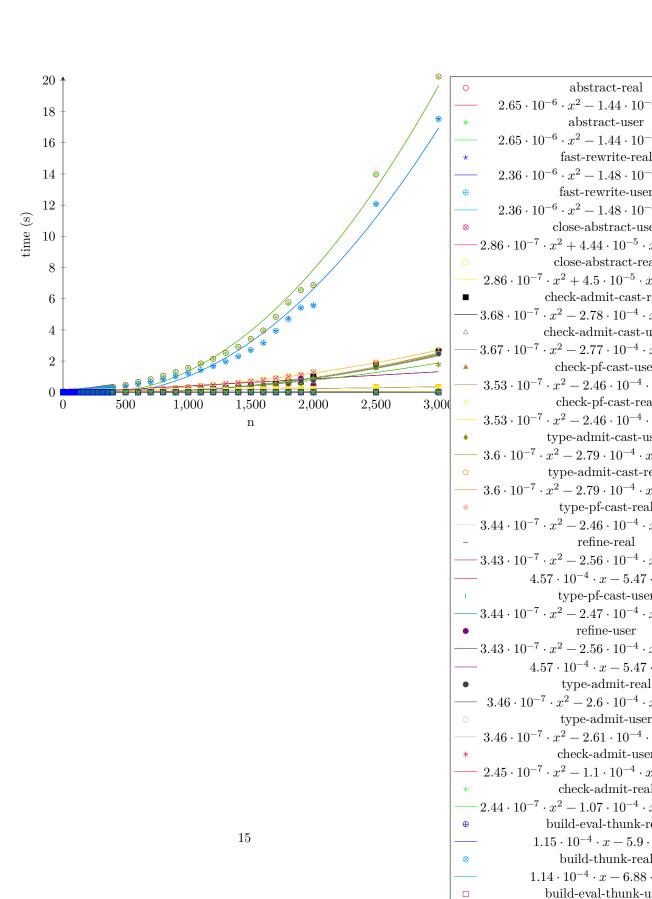


Figure 14: timing-typeclass-reification-let-in-PHOAS



abstract-real

abstract-user

fast-rewrite-real

fast-rewrite-user

close-abstract-use

close-abstract-rea

check-admit-cast-r

check-admit-cast-u

check-pf-cast-use

check-pf-cast-rea

type-admit-cast-us

type-admit-cast-re

type-pf-cast-real

refine-real

refine-user

type-admit-user

check-admit-user

check-admit-real

build-eval-thunk-re

 $1.15 \cdot 10^{-4} \cdot x - 5.9$ build-thunk-real $1.14 \cdot 10^{-4} \cdot x - 6.88$ build-eval-thunk-u $1.15 \cdot 10^{-4} \cdot x - 7.13 \cdot$ build-thunk-user $1.14 \cdot 10^{-4} \cdot x - 8.07$

 $4.57 \cdot 10^{-4} \cdot x - 5.47 \cdot$ type-pf-cast-user

 $4.57 \cdot 10^{-4} \cdot x - 5.47 \cdot$ type-admit-real