

Figure 1: timing-pattern

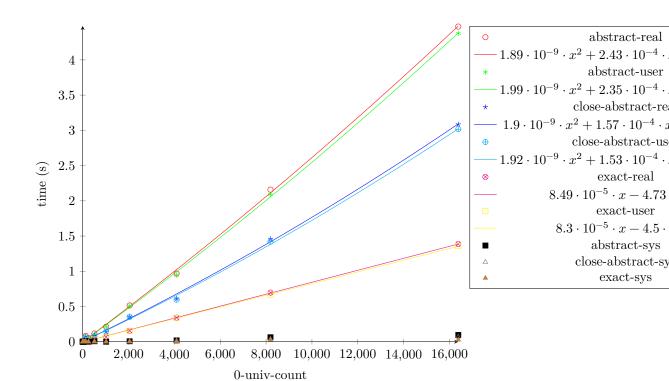


Figure 2: timing-n-polymorphic-universes param-1-n $\,0$

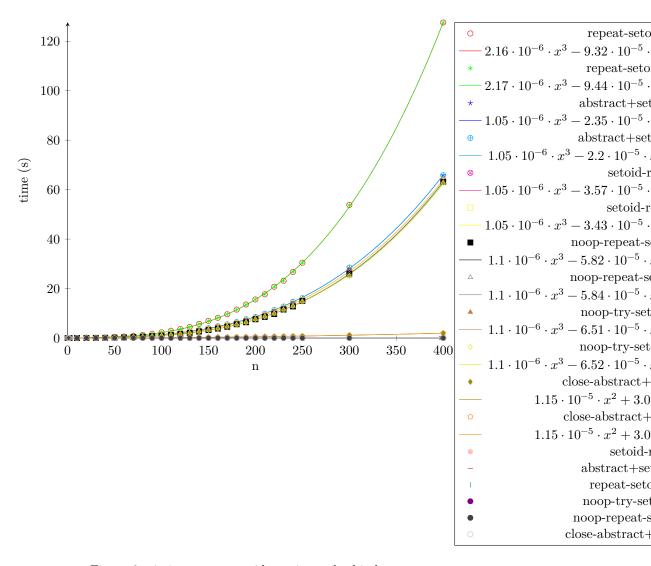
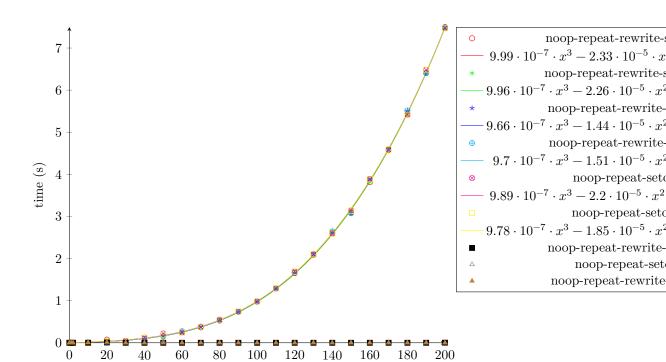


Figure 3: timing-repeat-setoid-rewrite-under-binders



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

n

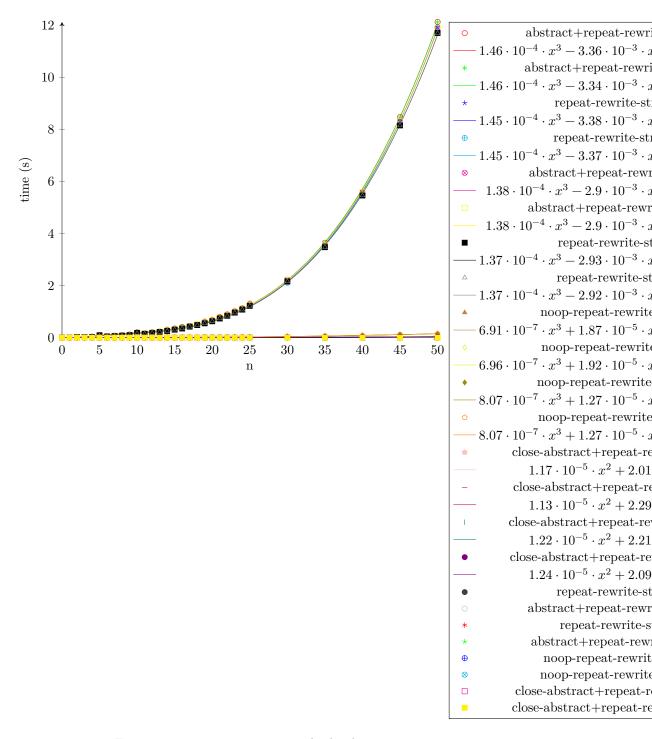


Figure 5: timing-rewrite-strat-under-binders

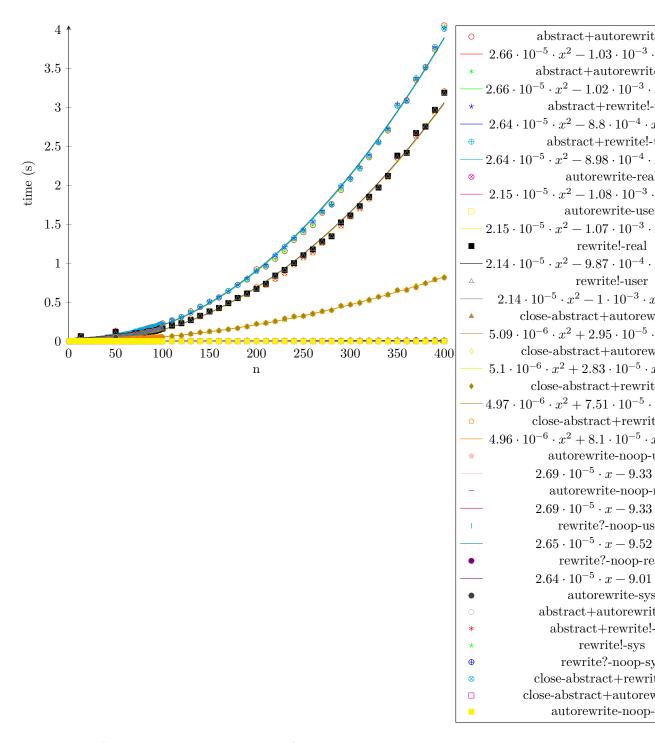


Figure 6: timing-rewrite-repeated-app-autorewrite

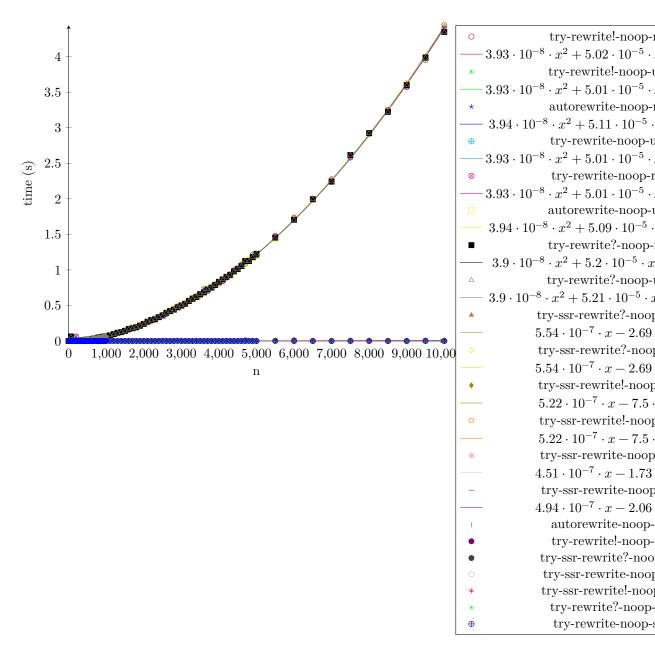


Figure 7: timing-rewrite-repeated-app-autorewrite-noop

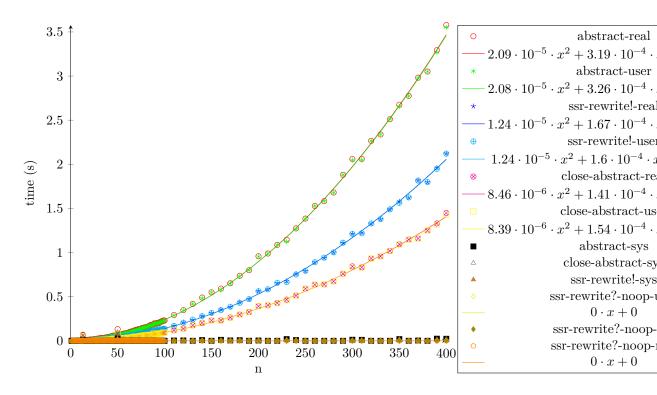


Figure 8: timing-rewrite-repeated-app-ssrrewrite

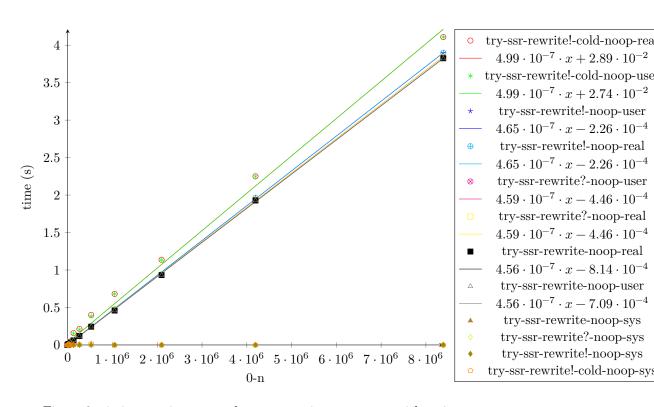
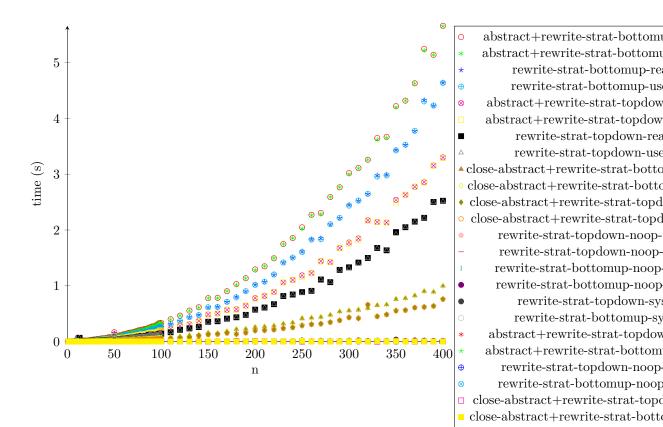


Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn $\ 1$



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

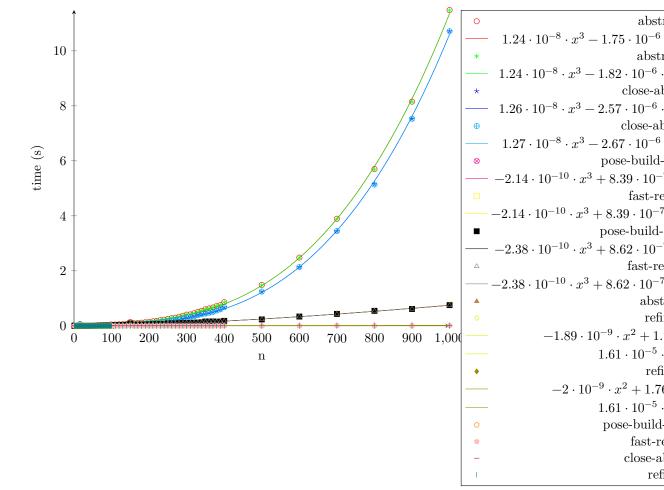
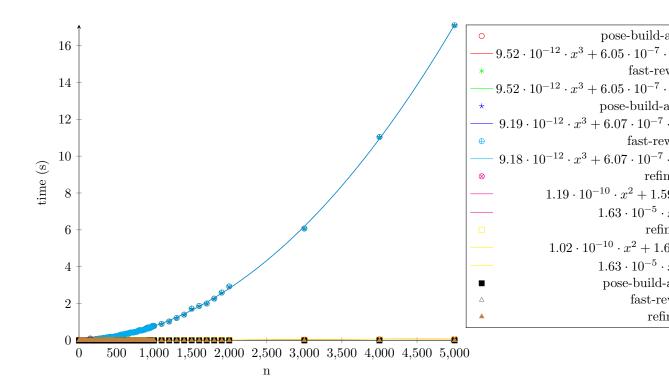
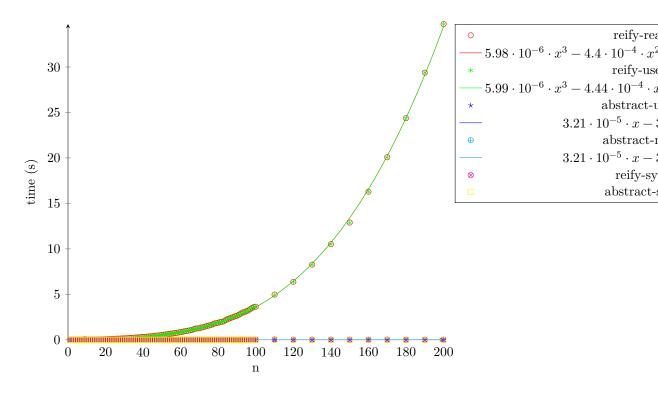


Figure 11: timing-rewrite-repeated-app-fast-rewrite



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



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

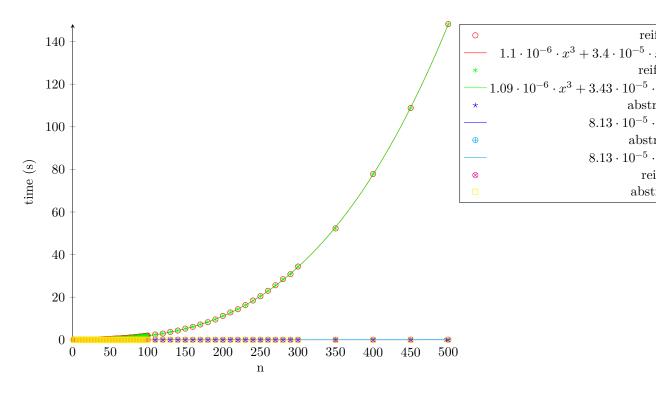
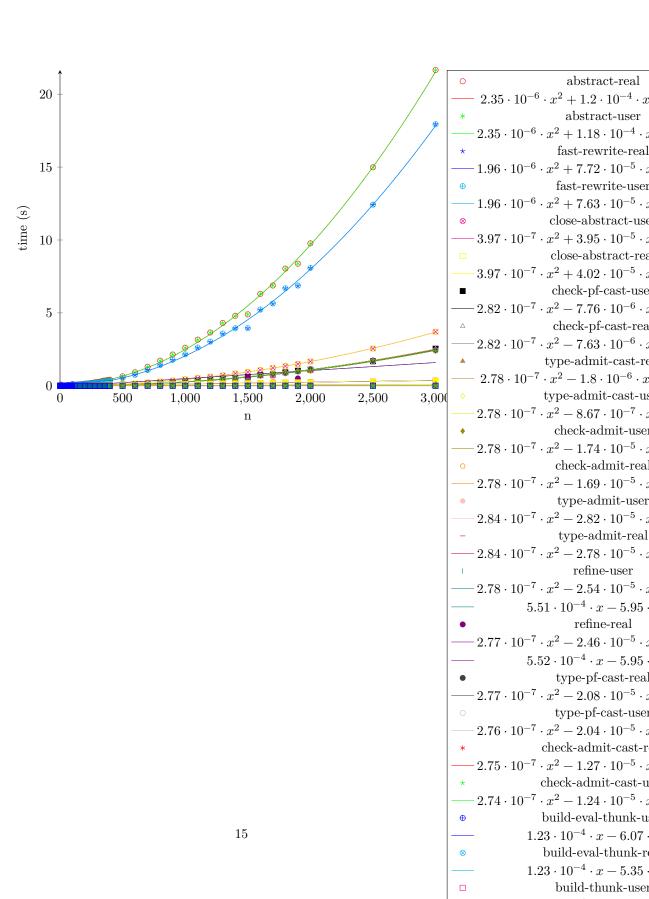


Figure 14: timing-typeclass-reification-let-in-PHOAS



abstract-real

abstract-user

fast-rewrite-real

fast-rewrite-user

close-abstract-use

close-abstract-rea

check-pf-cast-use

check-pf-cast-rea

type-admit-cast-re

type-admit-cast-us

check-admit-user

check-admit-real

type-admit-user

type-admit-real

refine-user

 $5.51 \cdot 10^{-4} \cdot x - 5.95 \cdot$ refine-real

 $5.52 \cdot 10^{-4} \cdot x - 5.95 \cdot$ type-pf-cast-real

type-pf-cast-user

check-admit-cast-r

check-admit-cast-u

build-eval-thunk-u

 $1.23 \cdot 10^{-4} \cdot x - 6.07$ build-eval-thunk-re $1.23 \cdot 10^{-4} \cdot x - 5.35 \cdot$ build-thunk-user $1.22 \cdot 10^{-4} \cdot x - 7.39$ build-thunk-real $1.22 \cdot 10^{-4} \cdot x - 6.59$ -1- - -1- T ---