

Figure 1: timing-pattern

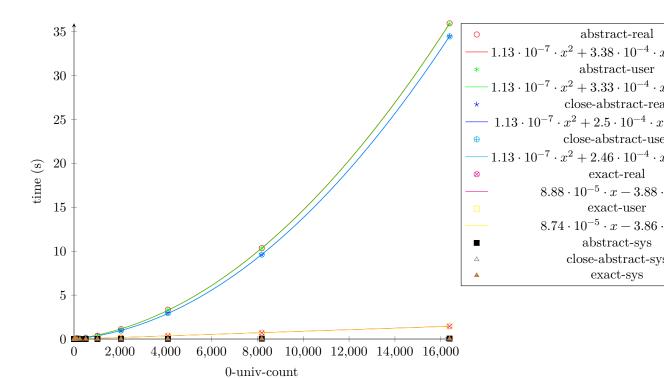


Figure 2: timing-n-polymorphic-universes param-1-n 0

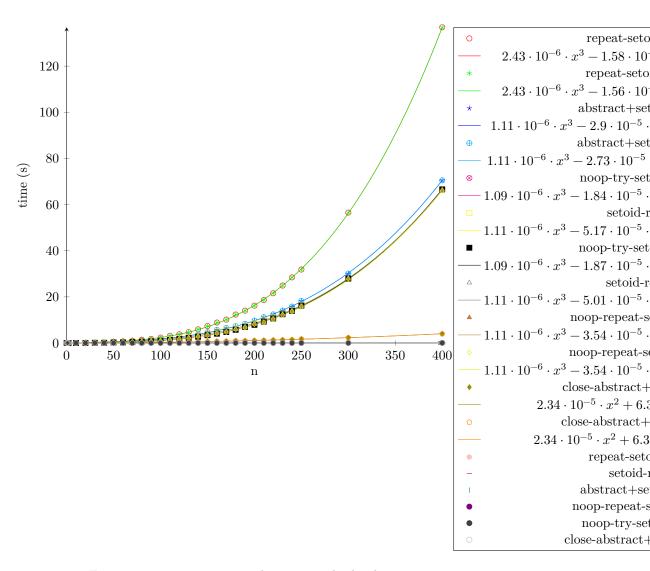
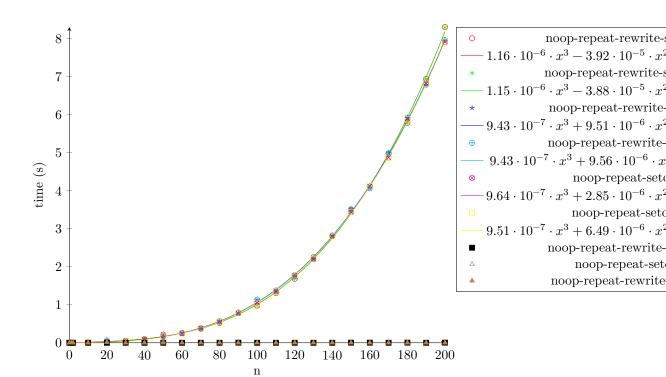


Figure 3: timing-repeat-setoid-rewrite-under-binders



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

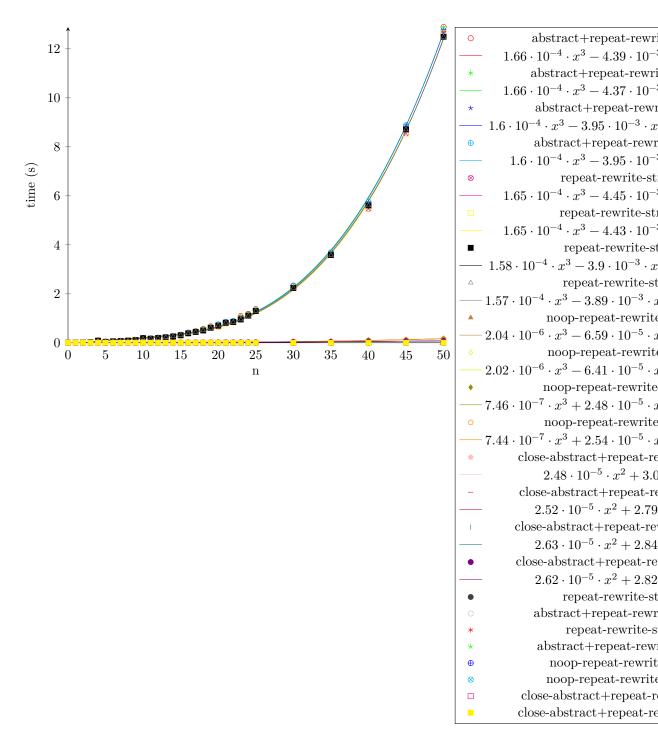


Figure 5: timing-rewrite-strat-under-binders

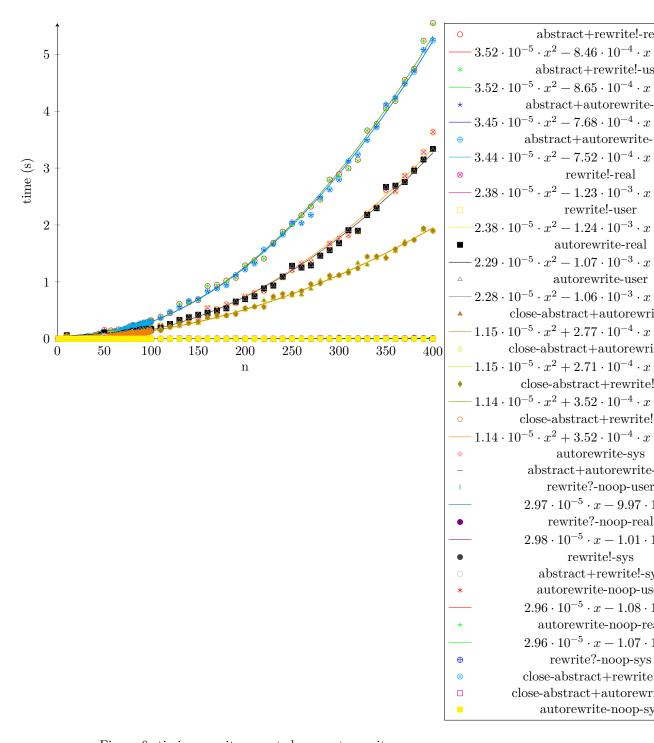


Figure 6: timing-rewrite-repeated-app-autorewrite

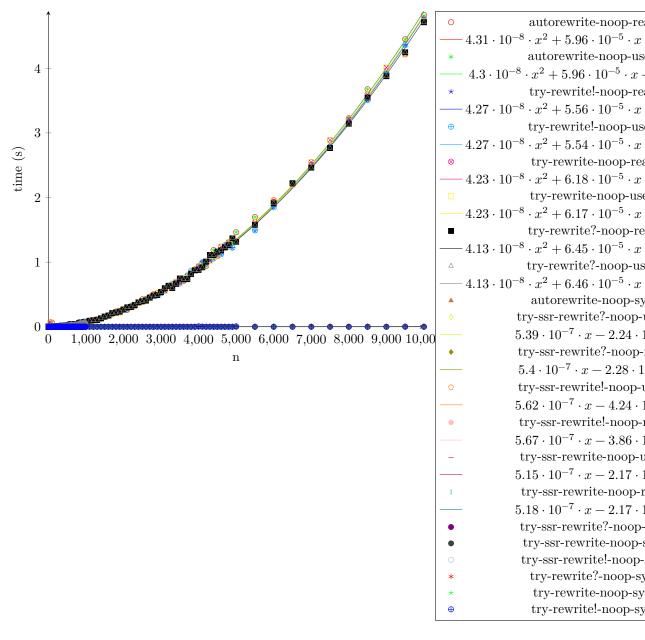
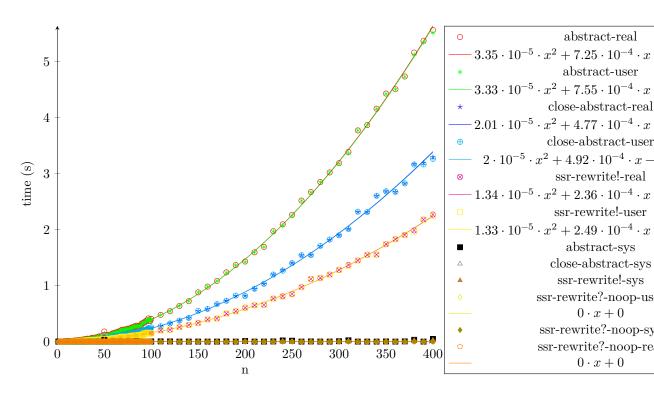


Figure 7: timing-rewrite-repeated-app-autorewrite-noop



 ${\bf Figure~8:~timing\text{-}rewrite\text{-}repeated\text{-}app\text{-}ssrrewrite}$

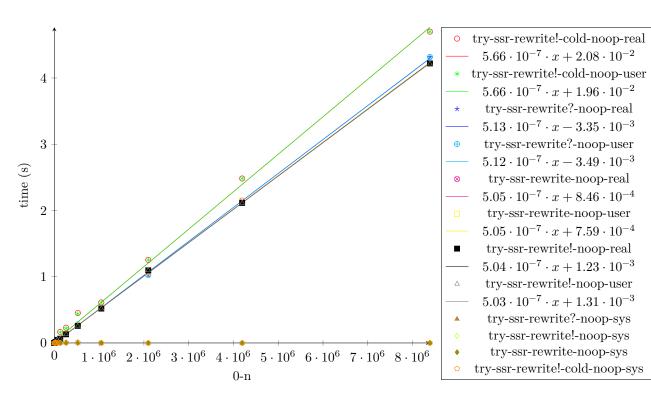


Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn $\ 1$

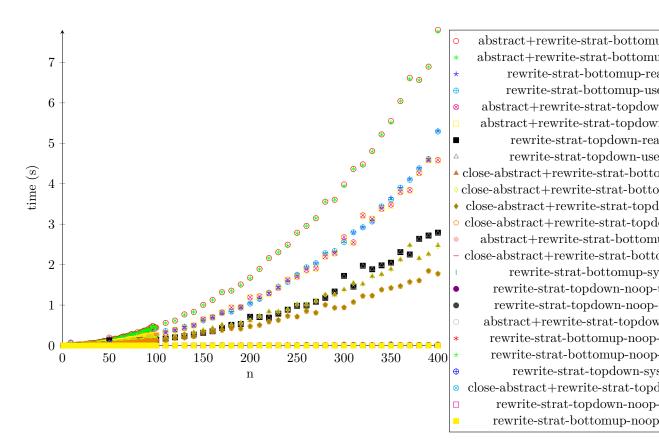


Figure 10: timing-rewrite-repeated-app-rewrite-strat

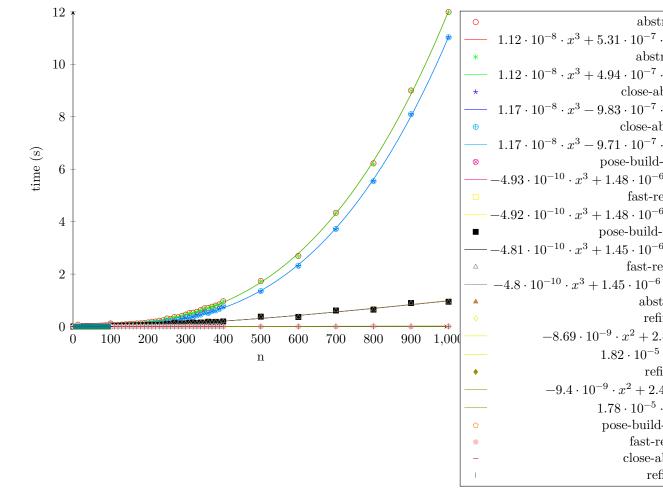
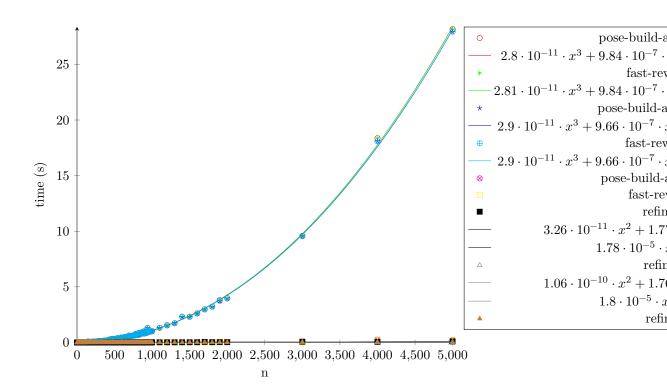
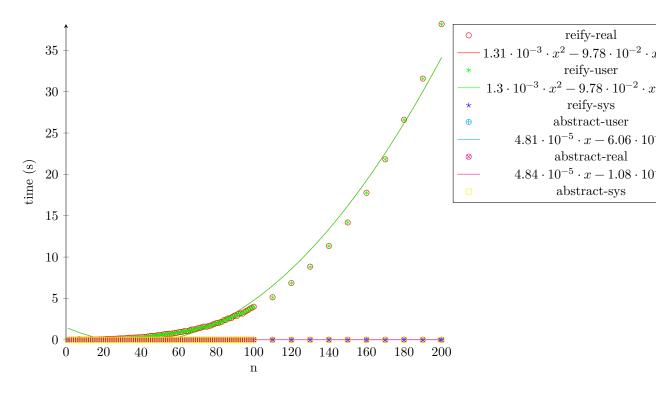


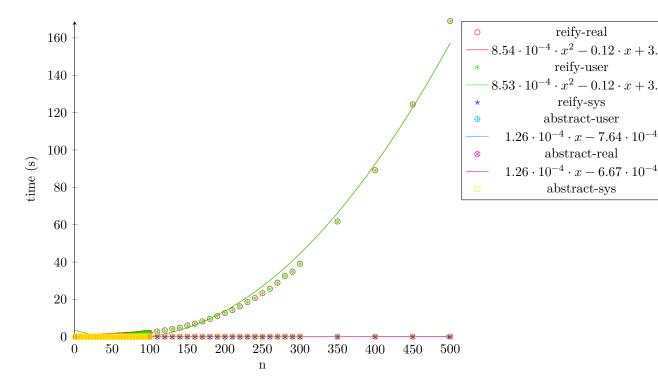
Figure 11: timing-rewrite-repeated-app-fast-rewrite



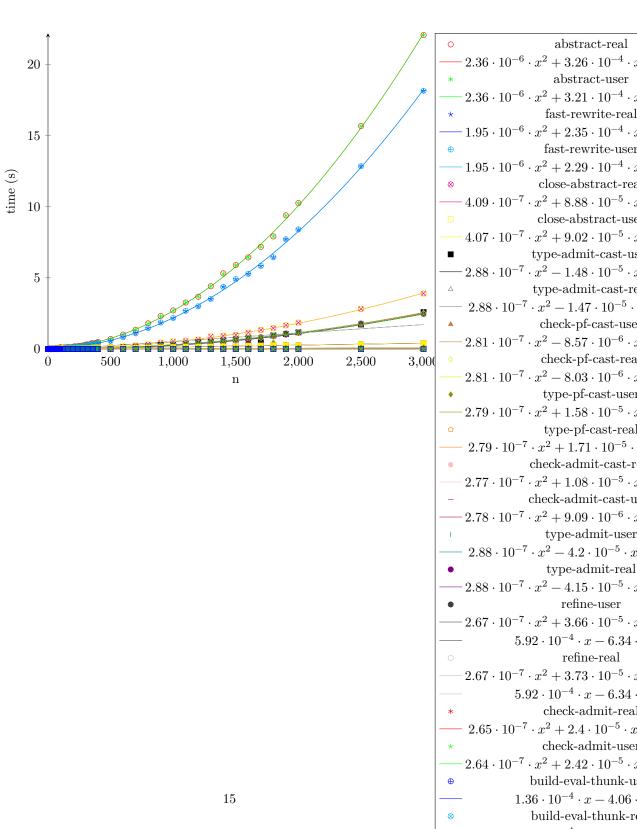
Figure~12:~timing-rewrite-repeated-app-fast-rewrite-no-abstract



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



Figure~14:~timing-type class-reification-let-in-PHOAS



 $1.36 \cdot 10^{-4} \cdot x - 1.71 \cdot$ build-thunk-user $1.35 \cdot 10^{-4} \cdot x - 4.96 \cdot$ build-thunk-real $1.35 \cdot 10^{-4} \cdot x - 2.39 \cdot$ chock Lucor

abstract-real

abstract-user

fast-rewrite-real

fast-rewrite-user

close-abstract-rea

close-abstract-use

type-admit-cast-us

type-admit-cast-re

check-pf-cast-use

check-pf-cast-rea

type-pf-cast-user

type-pf-cast-real

check-admit-cast-r

check-admit-cast-u

type-admit-user