

Figure 1: timing-pattern

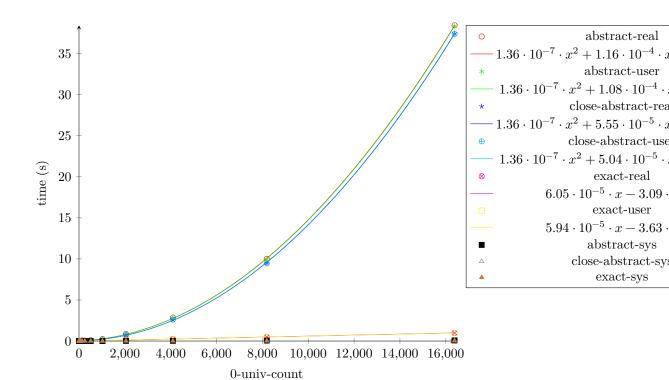


Figure 2: timing-n-polymorphic-universes param-1-n 0

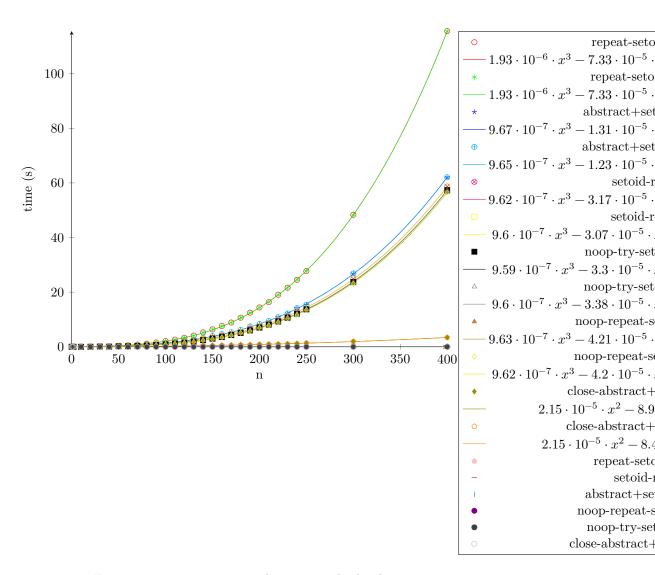


Figure 3: timing-repeat-setoid-rewrite-under-binders

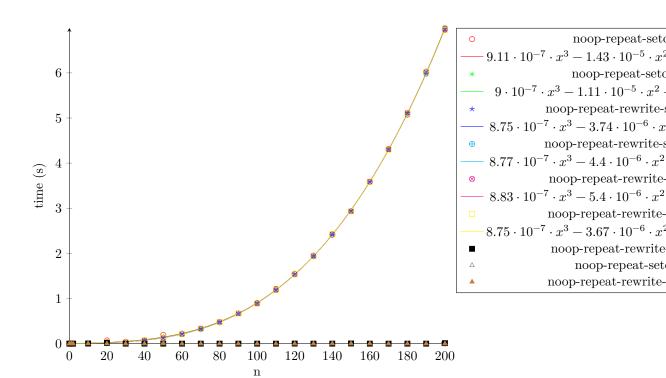


Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

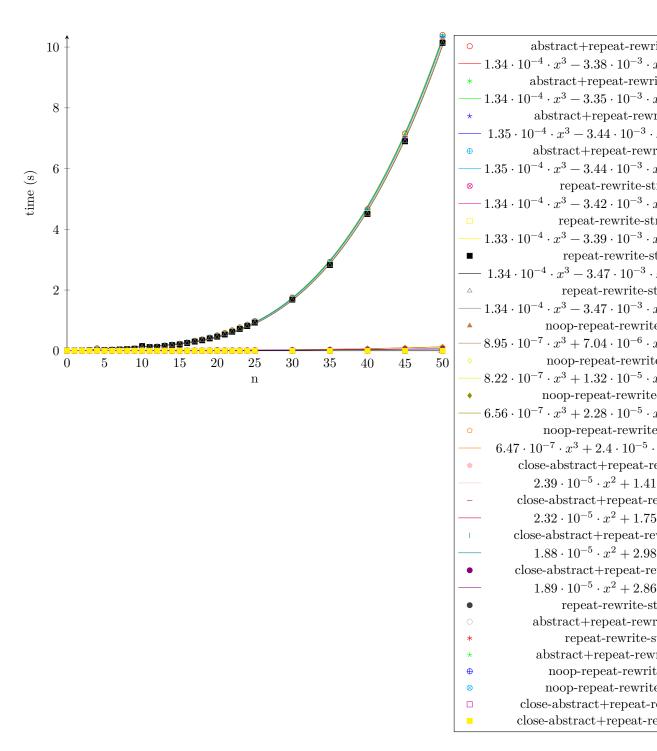
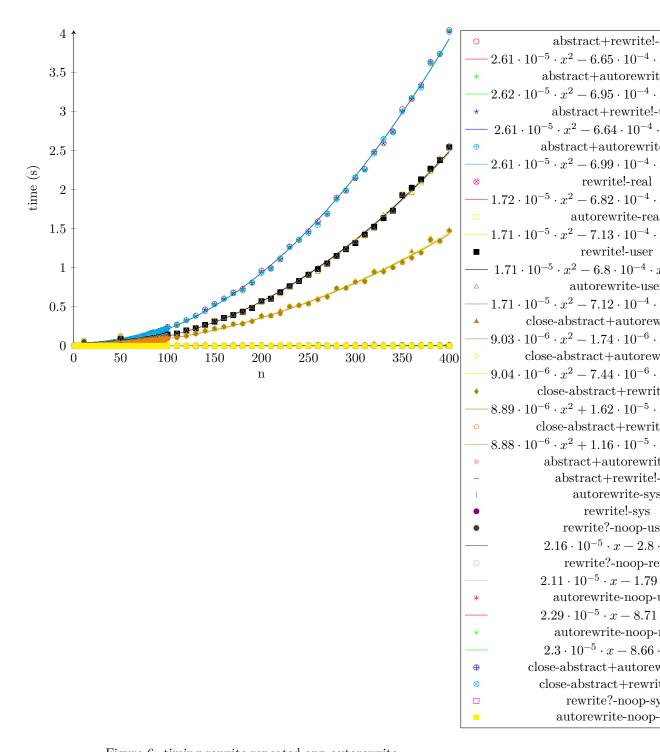


Figure 5: timing-rewrite-strat-under-binders



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

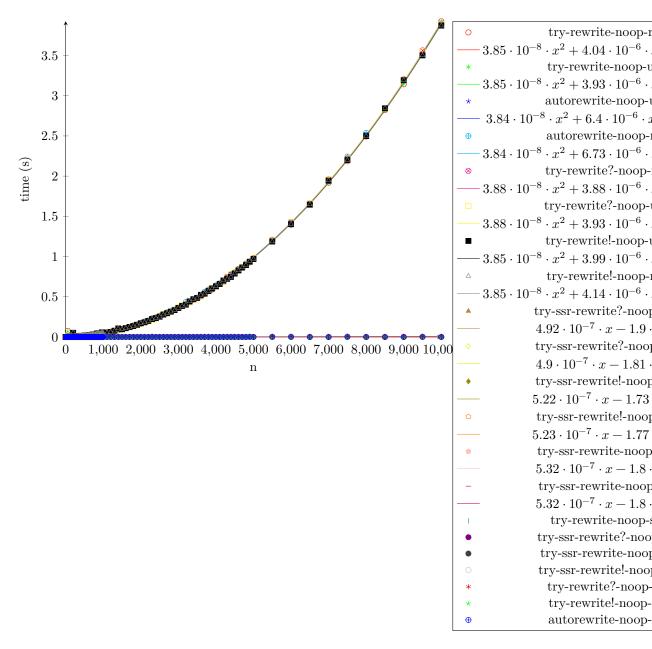
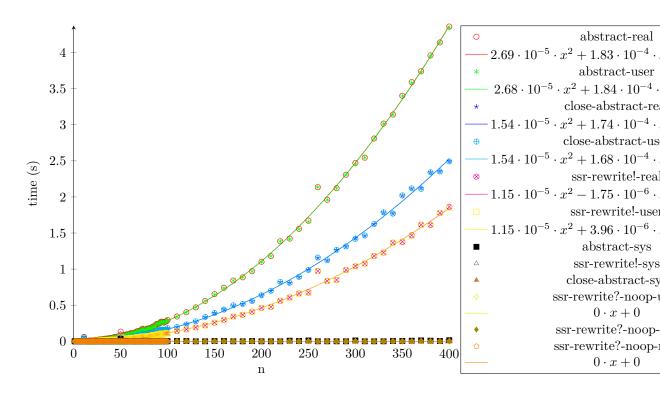


Figure 7: timing-rewrite-repeated-app-autorewrite-noop



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

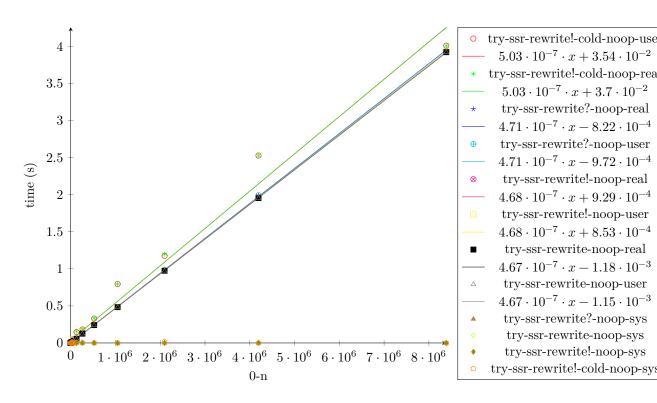


Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn $\ 1$

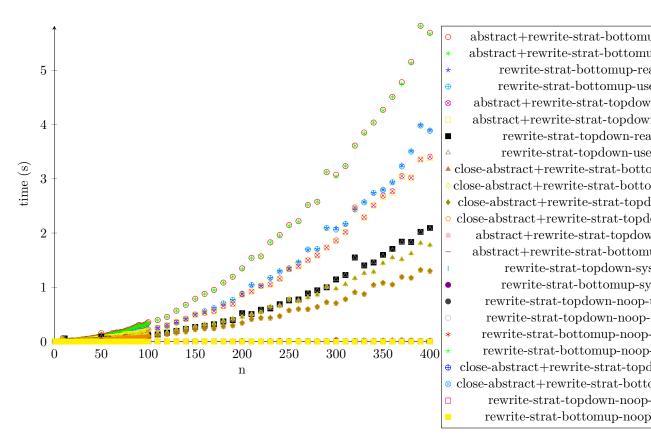
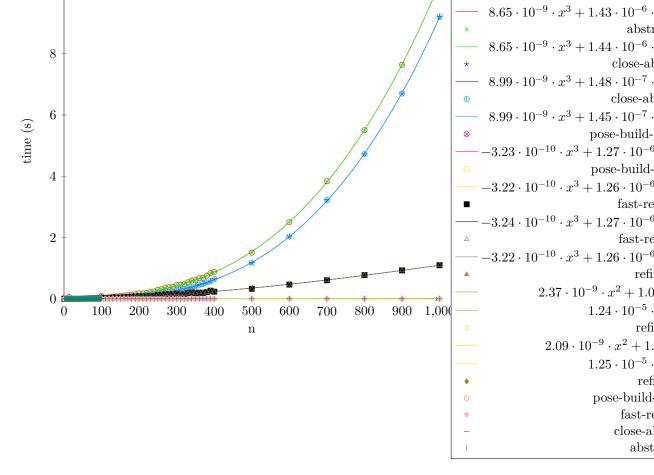


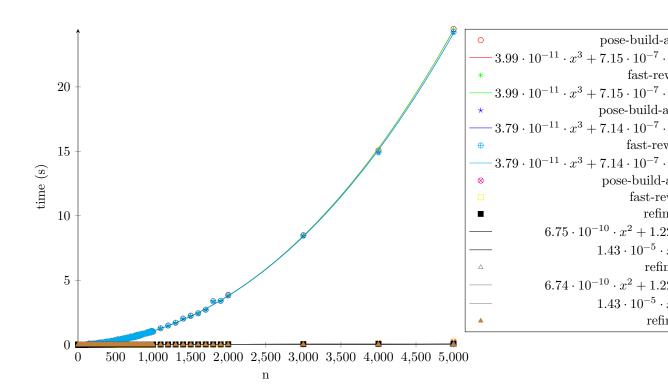
Figure 10: timing-rewrite-repeated-app-rewrite-strat



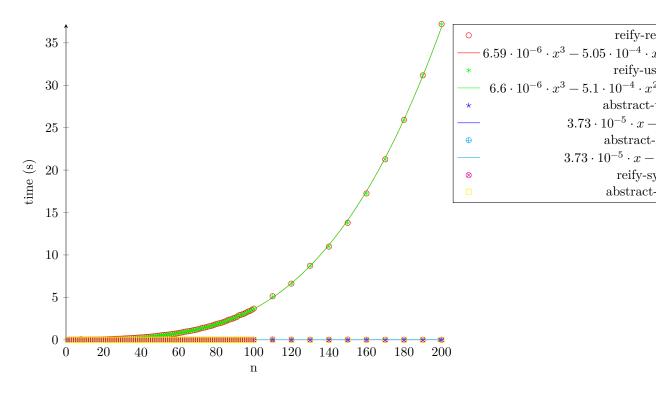
abst

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

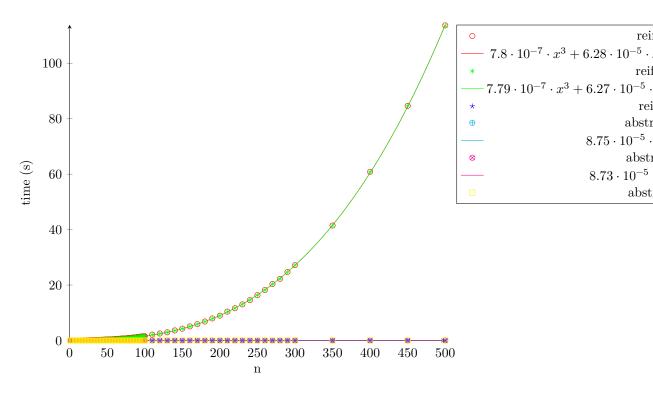
10 🕇



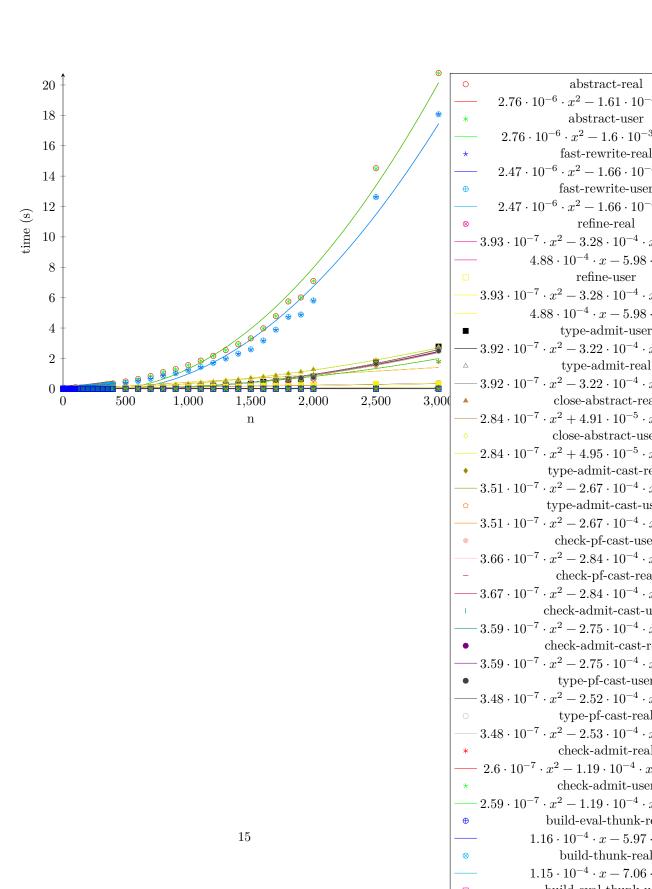
Figure~12:~timing-rewrite-repeated-app-fast-rewrite-no-abstract



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



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



abstract-real

abstract-user

fast-rewrite-real

fast-rewrite-user

refine-real

refine-user

type-admit-user

type-admit-real

close-abstract-rea

close-abstract-use

type-admit-cast-re

type-admit-cast-us

check-pf-cast-use

check-pf-cast-rea

check-admit-cast-u

check-admit-cast-r

type-pf-cast-user

type-pf-cast-real

check-admit-real

check-admit-user

build-eval-thunk-re

 $1.16 \cdot 10^{-4} \cdot x - 5.97$ build-thunk-real $1.15 \cdot 10^{-4} \cdot x - 7.06 \cdot$ build-eval-thunk-u $1.14 \cdot 10^{-4} \cdot x - 5.48 \cdot$ build-thunk-user $1.14 \cdot 10^{-4} \cdot x - 6.31 \cdot$ obools I secon

 $4.88 \cdot 10^{-4} \cdot x - 5.98 \cdot$

 $4.88 \cdot 10^{-4} \cdot x - 5.98 \cdot$