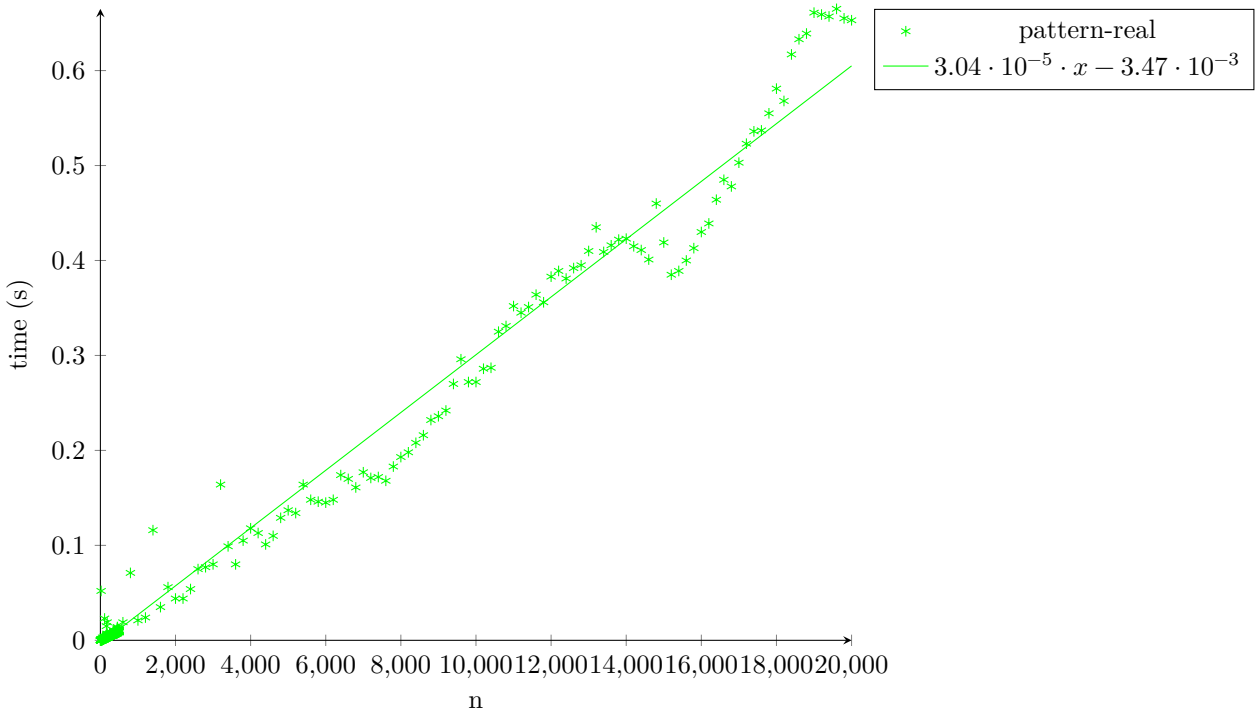


Figure 1: timing-pattern

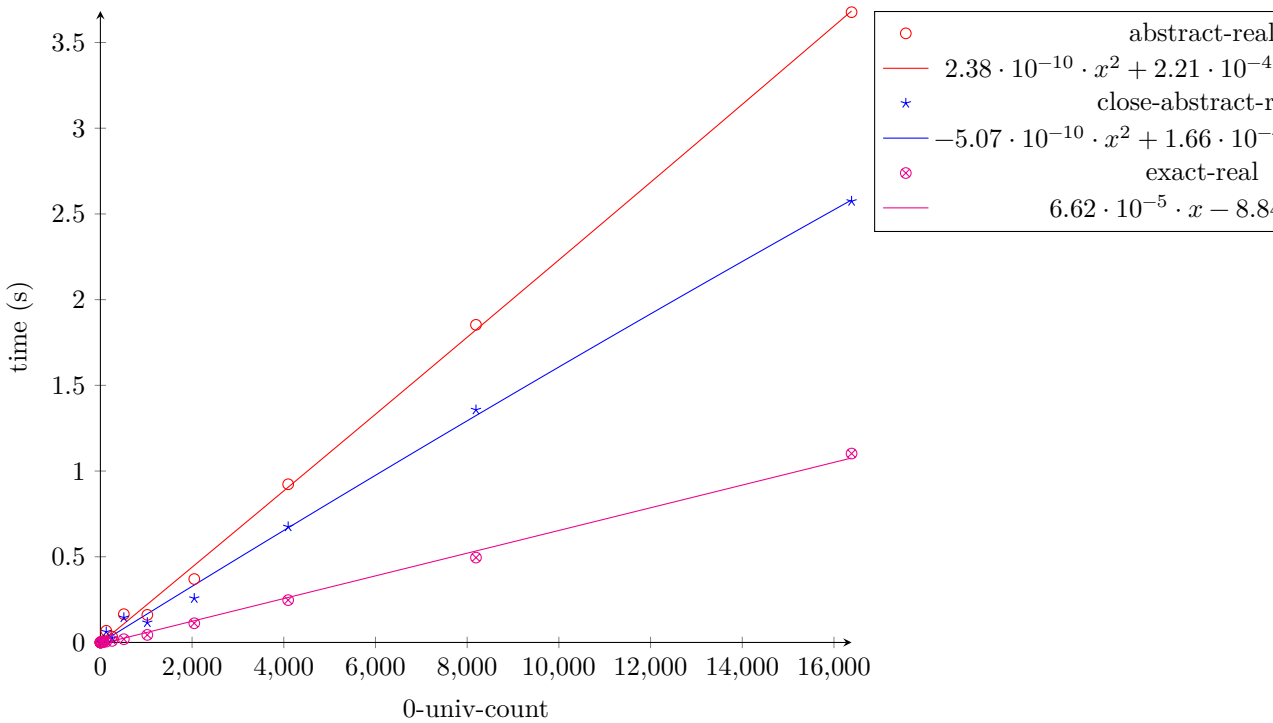


Figure 2: timing-n-polymorphic-universes param-1-n 0

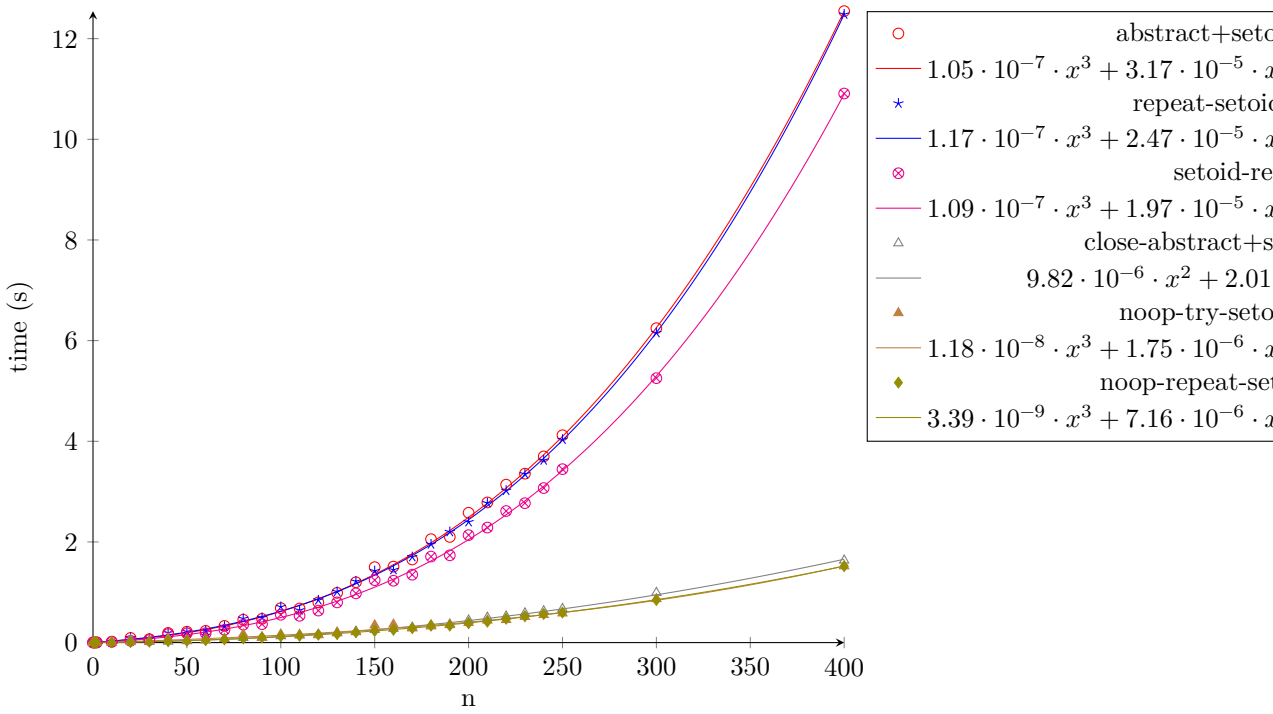


Figure 3: timing-repeat-setoid-rewrite-under-binders

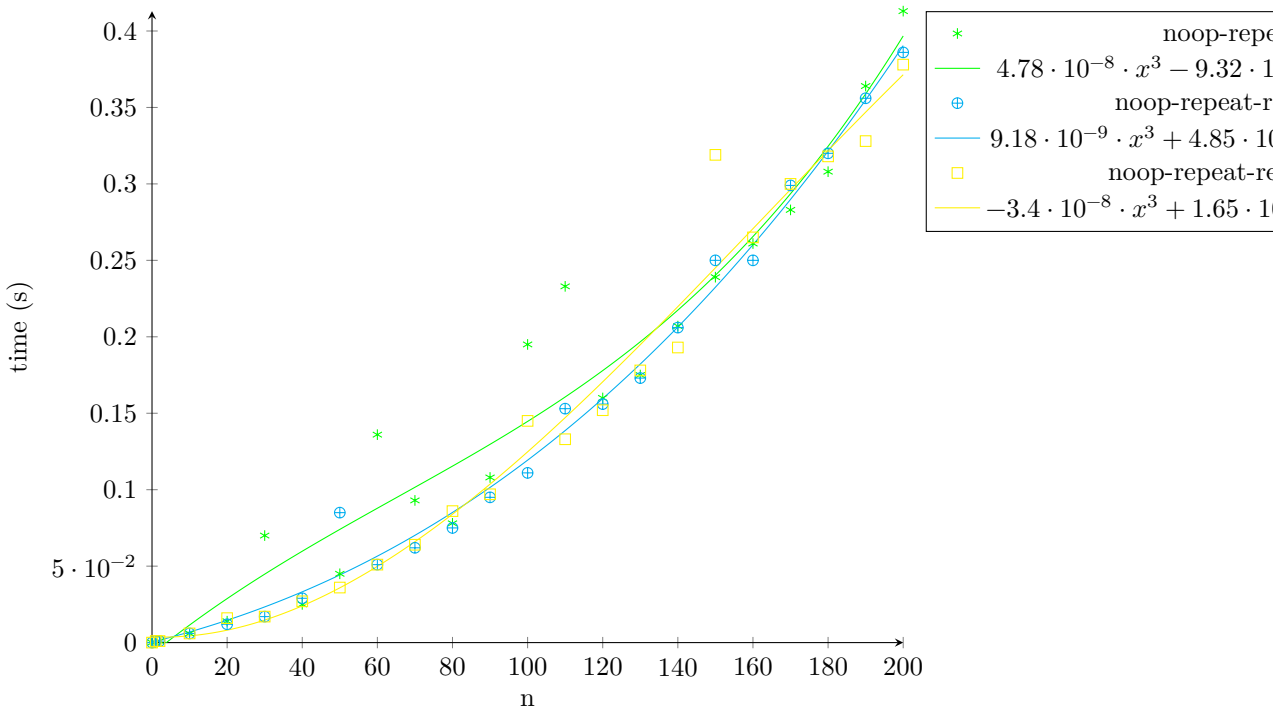


Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

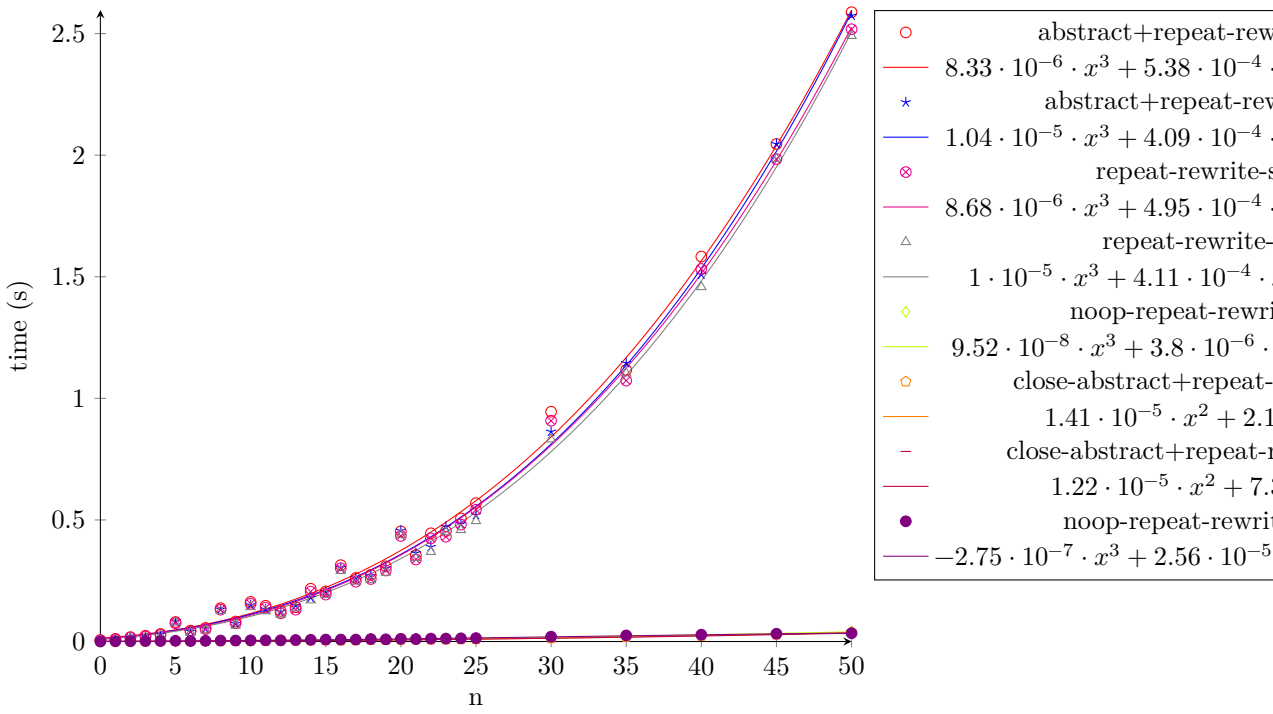


Figure 5: timing-rewrite-strat-under-binders

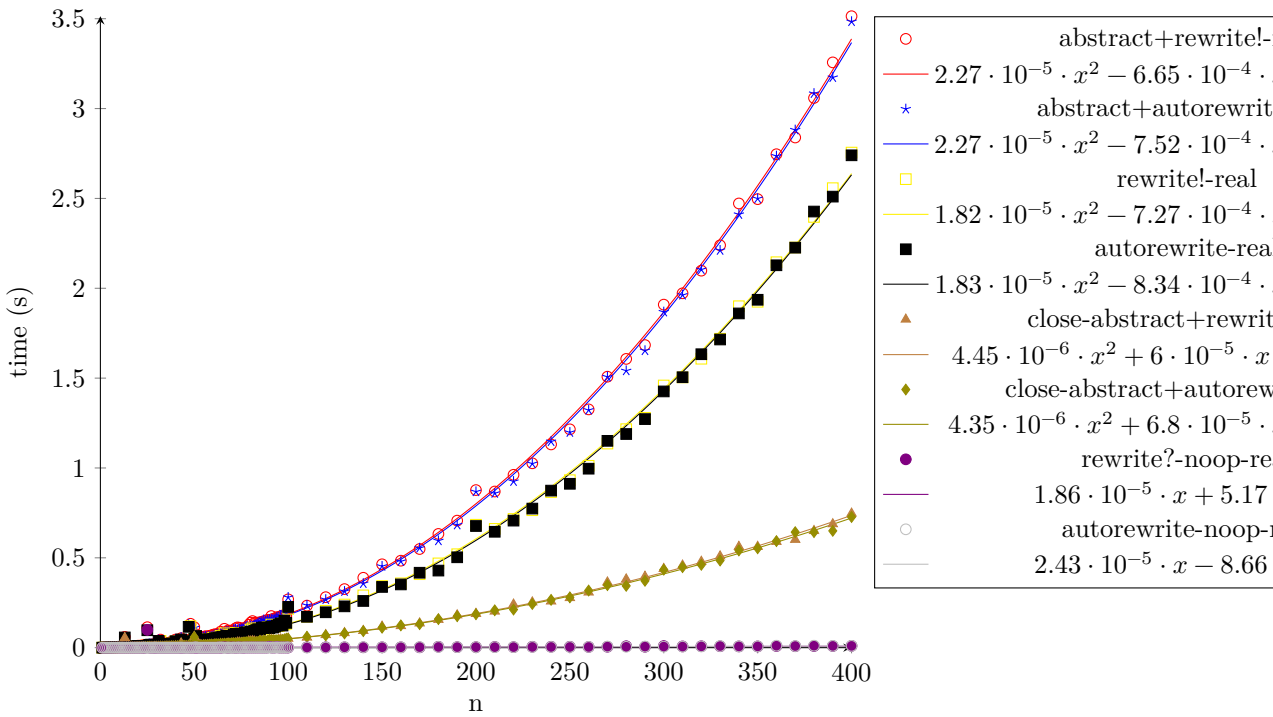


Figure 6: timing-rewrite-repeated-app-autorewrite

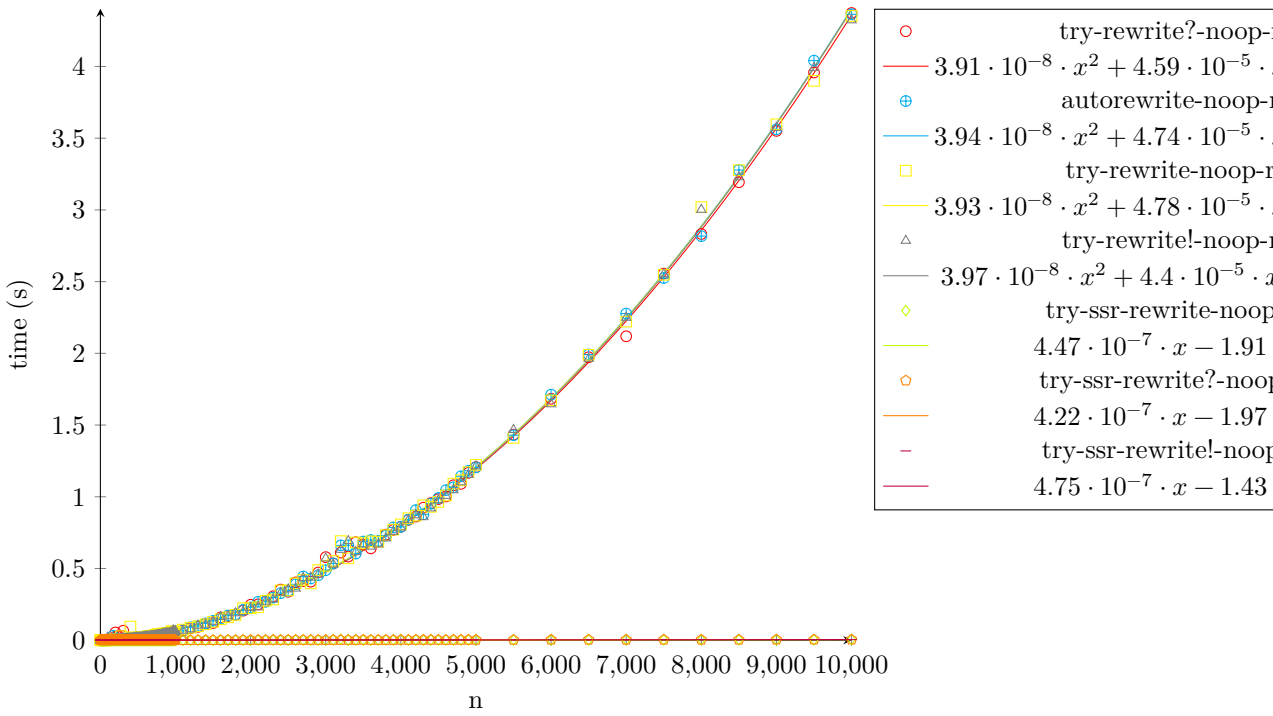


Figure 7: timing-rewrite-repeated-app-autorewrite-noop

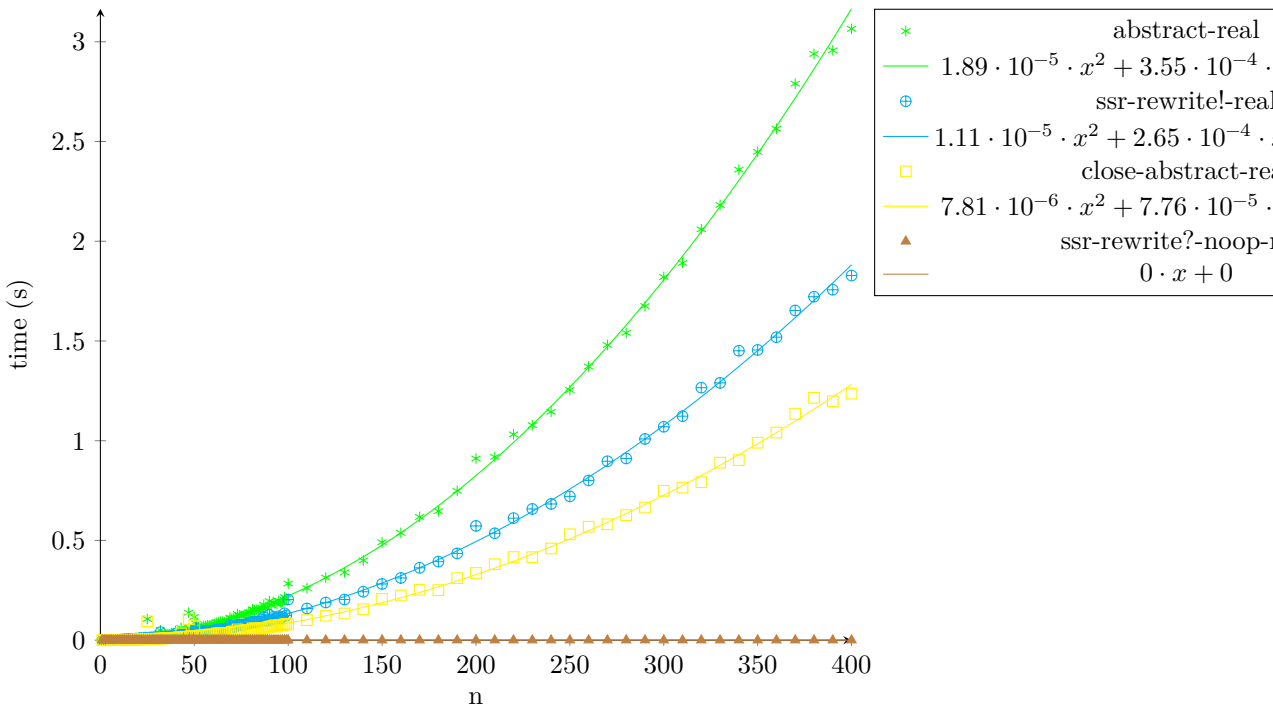


Figure 8: timing-rewrite-repeated-app-ssrrewrite

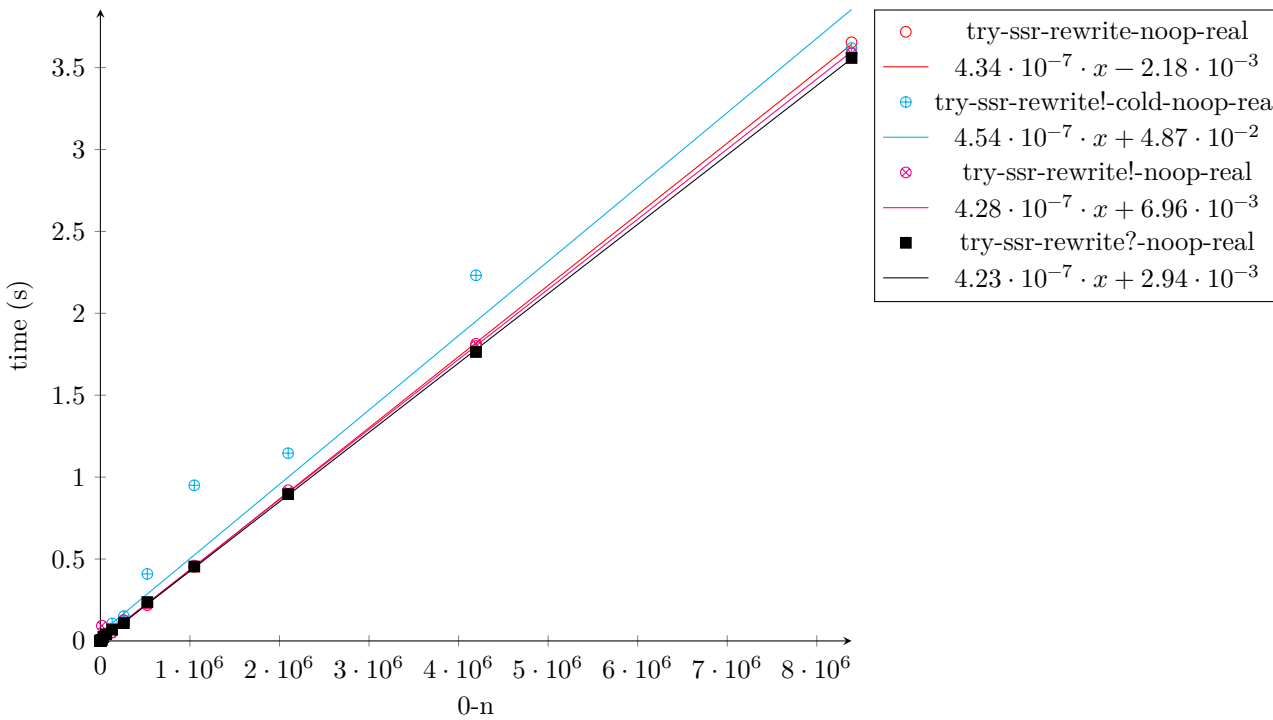


Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn 1

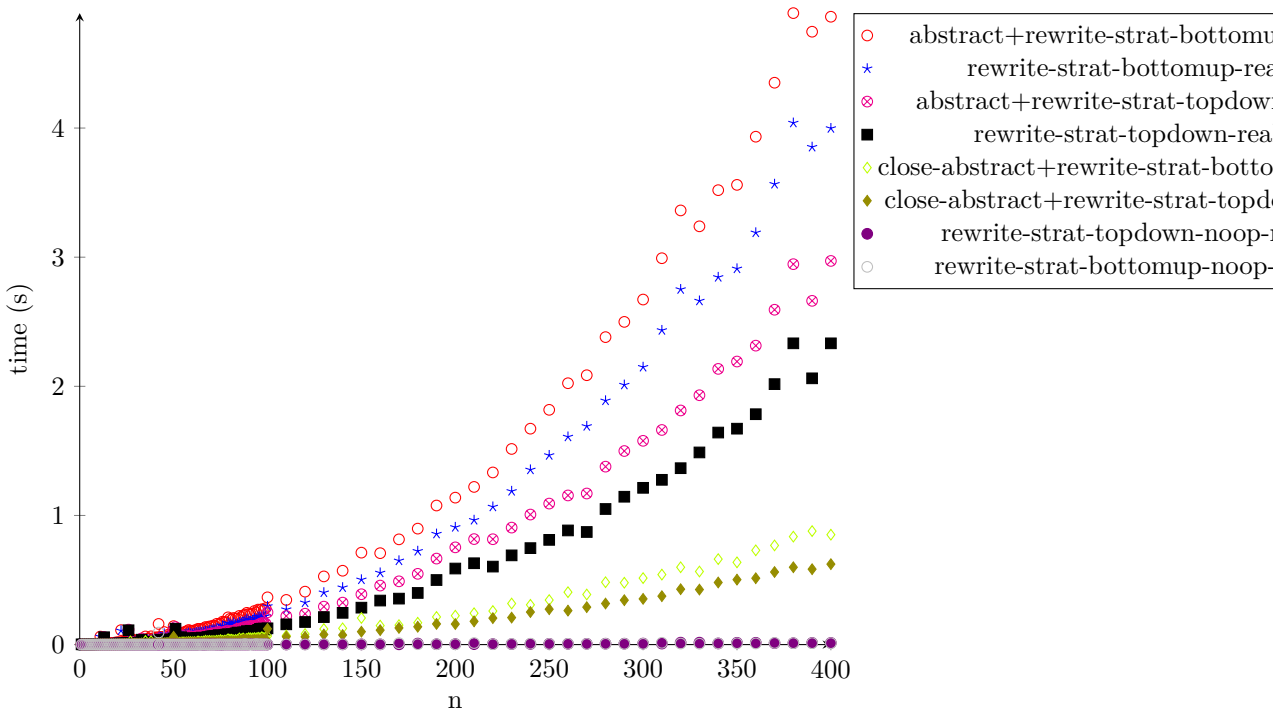


Figure 10: timing-rewrite-repeated-app-rewrite-strat

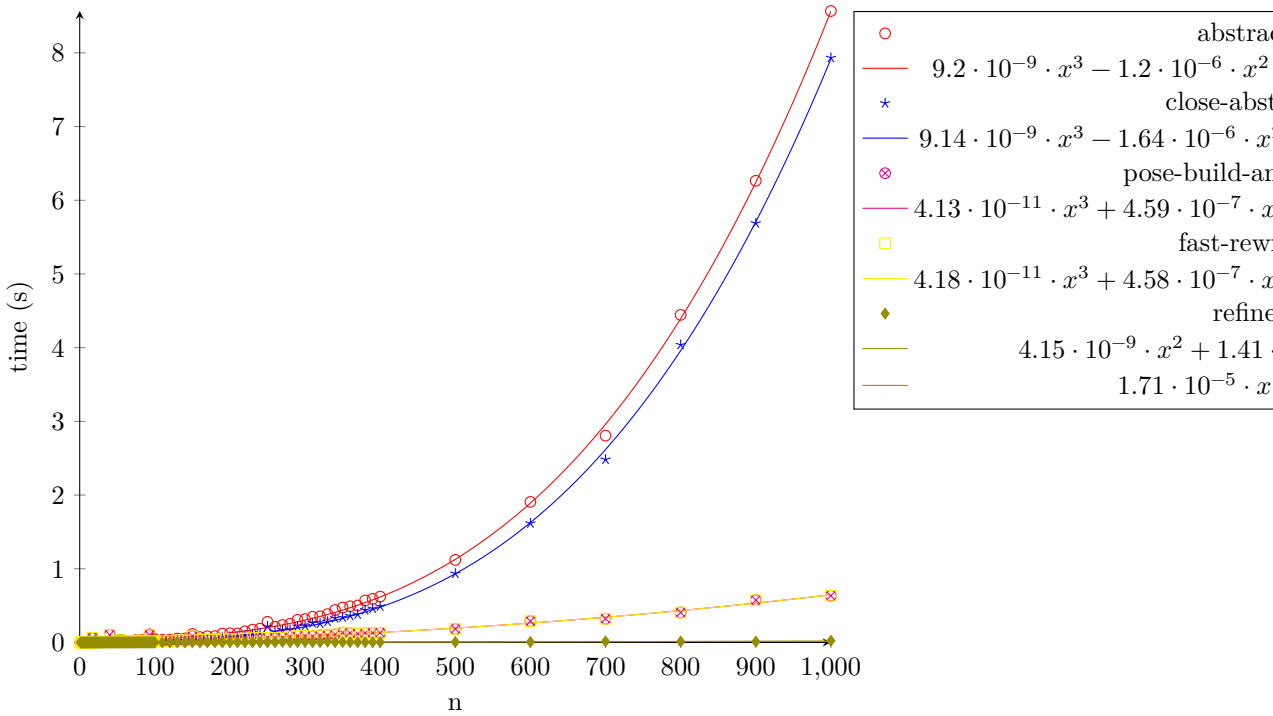


Figure 11: timing-rewrite-repeated-app-fast-rewrite

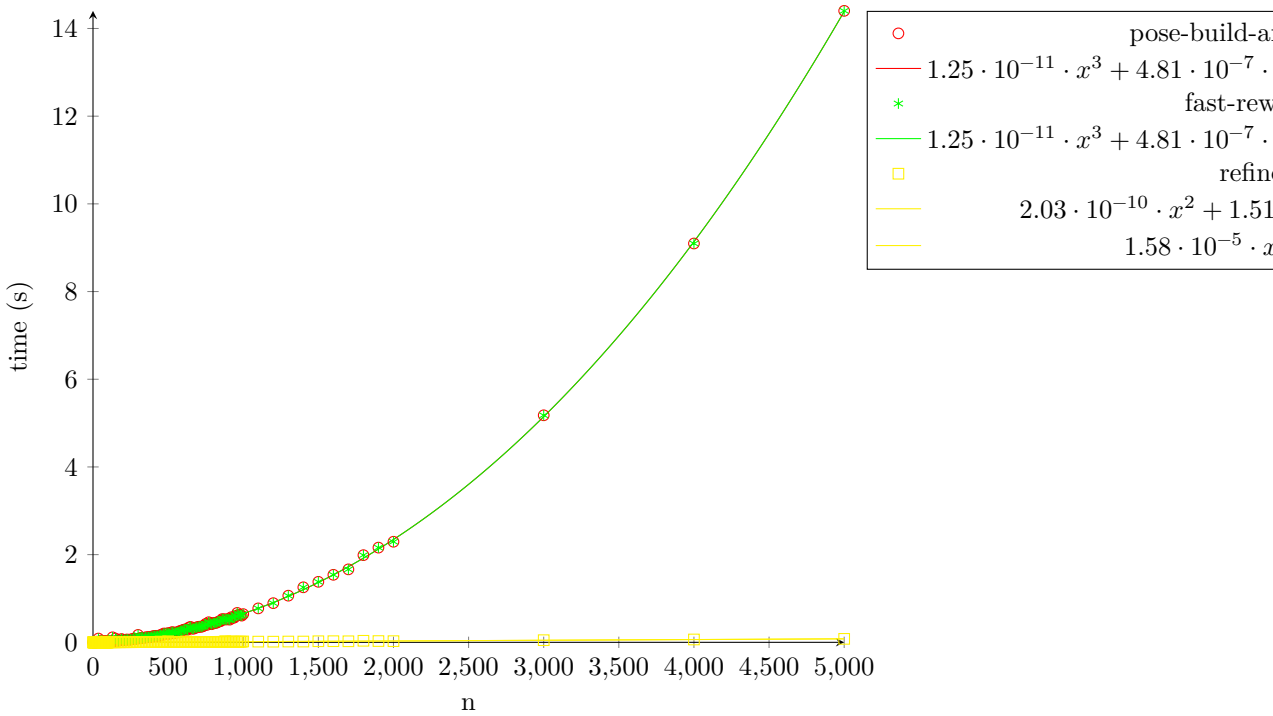


Figure 12: timing-rewrite-repeated-app-fast-rewrite-no-abstract

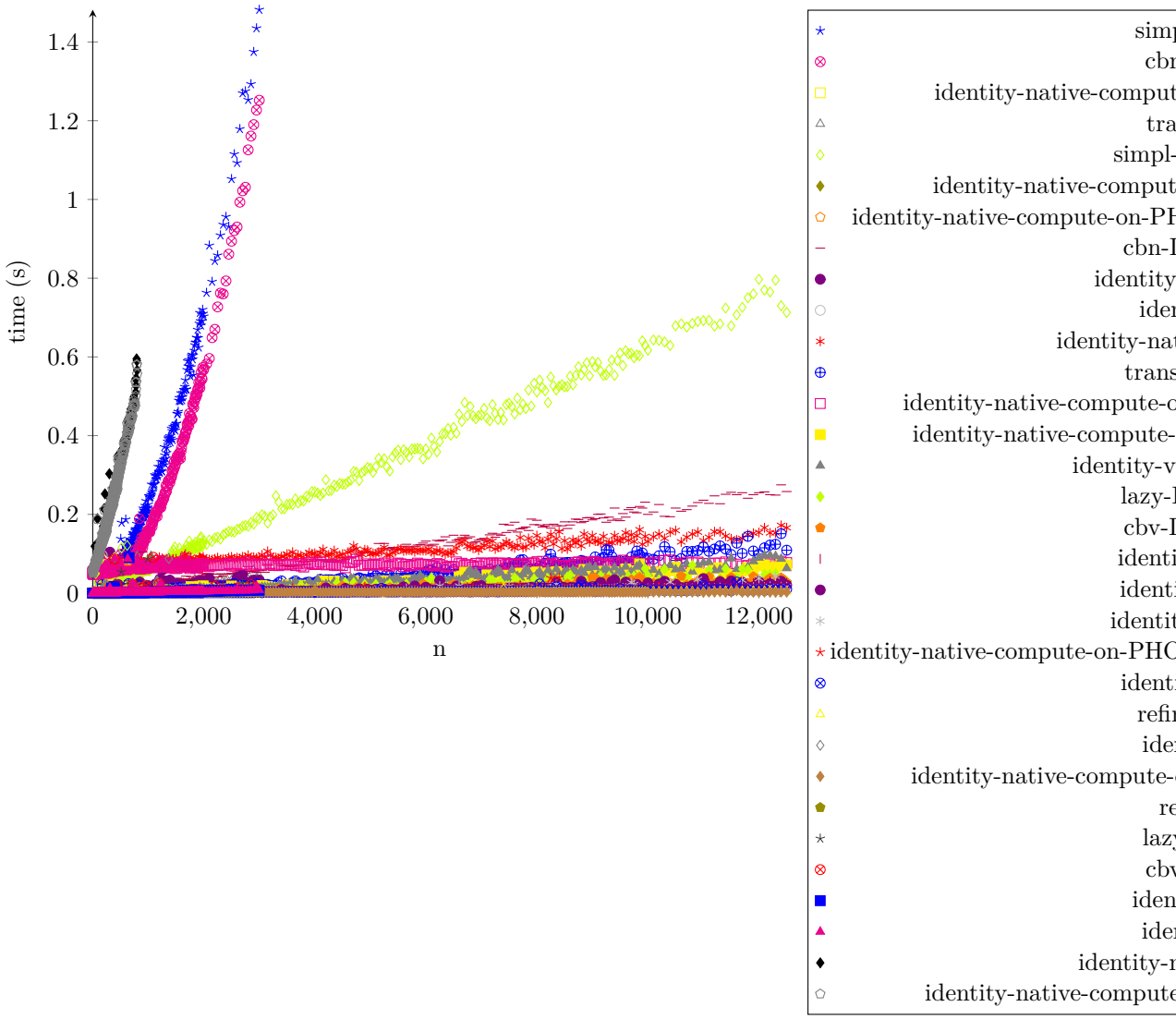


Figure 13: timing-Reify/BaselineStats

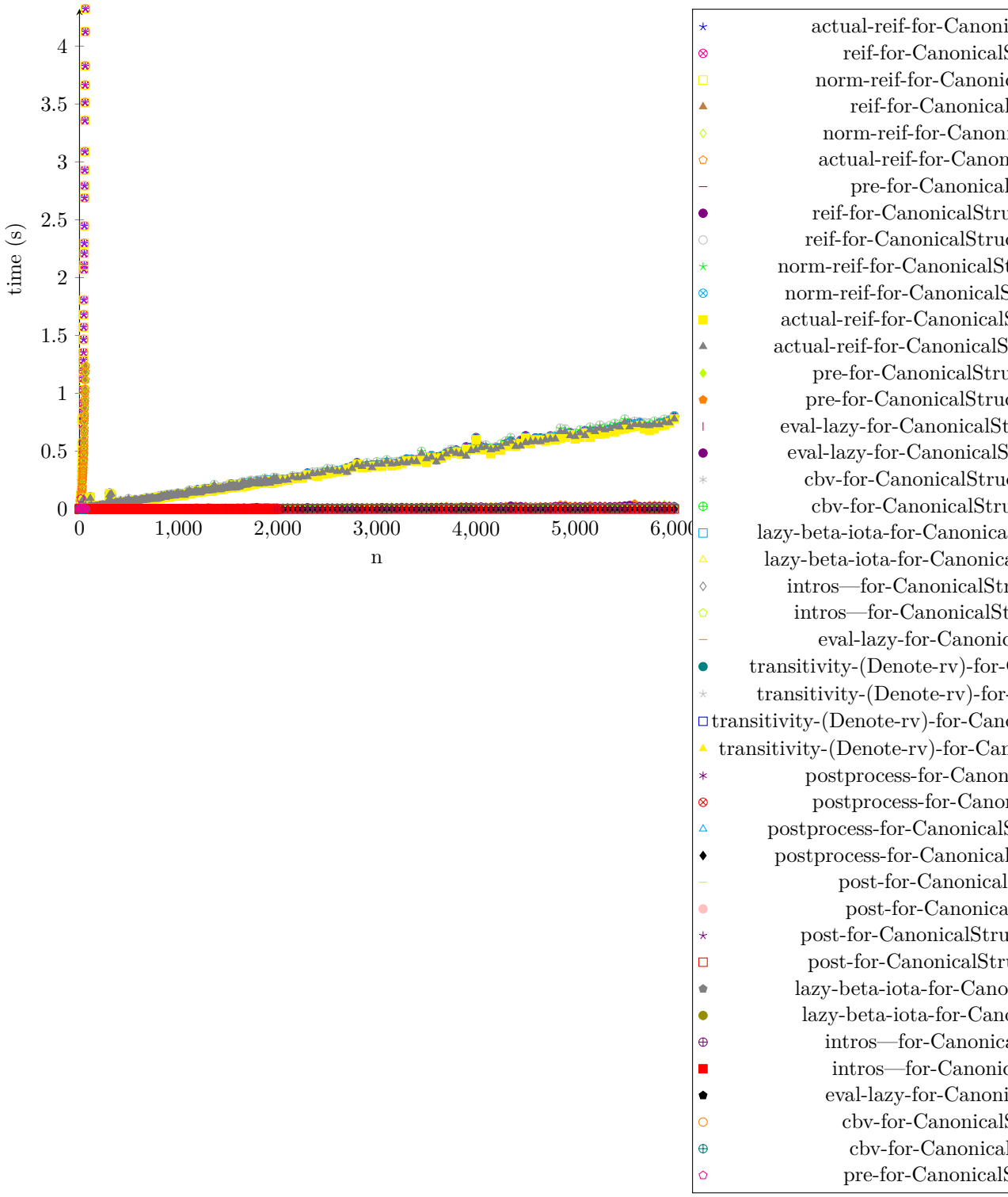


Figure 14: timing-Reify/CanonicalStructures

time (s)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1,000
2,000
3,000
4,000
5,000
6,000
n
reif-for-LtacTacInT
actual-reif-for-LtacTac
norm-reif-for-LtacTac
norm-reif-for-LtacT
reif-for-LtacTacInTern
norm-reif-for-LtacTacInT
actual-reif-for-LtacTacInT
reif-for-LtacTCEx
norm-reif-for-LtacTC
actual-reif-for-LtacTC
reif-for-LtacPrim
norm-reif-for-LtacPr
actual-reif-for-LtacPr
reif-for-LtacTacInTer
norm-reif-for-LtacTacIn
actual-reif-for-LtacTacIn
reif-for-LtacTacInTern
reif-for-LtacTCGa
reif-for-LtacTCP
norm-reif-for-LtacTacInT
norm-reif-for-LtacT
norm-reif-for-LtacTC
actual-reif-for-LtacTacInT
actual-reif-for-LtacT
actual-reif-for-LtacTC
reif-for-LtacTCE
actual-reif-for-LtacT
norm-reif-for-LtacTacI
cbv-for-LtacTCP
cbv-for-LtacTacInTer
cbv-for-LtacTacInTern
cbv-for-LtacTacInTern
cbv-for-LtacPrim
cbv-for-LtacTCGa
cbv-for-LtacTCEx
lazy-beta-iota-for-LtacTacI
lazy-beta-iota-for-LtacT
lazy-beta-iota-for-LtacT
lazy-beta-iota-for-LtacTacI
eval-lazy-for-LtacPri
eval-lazy-for-LtacTacInT
eval-lazy-for-LtacTacInT
eval-lazy-for-LtacTacInT
eval-lazy-for-LtacTC
eval-lazy-for-LtacTC
eval-lazy-for-LtacTC
lazy-beta-iota-for-LtacTac
lazy-beta-iota-for-Ltac
lazy-beta-iota-for-Ltac
transitivity-(Denote-rv)-for-Lta
transitivity-(Denote-rv)-for-L
transitivity-(Denote-rv)-for-Ltac
transitivity-(Denote-rv)-for-Lt

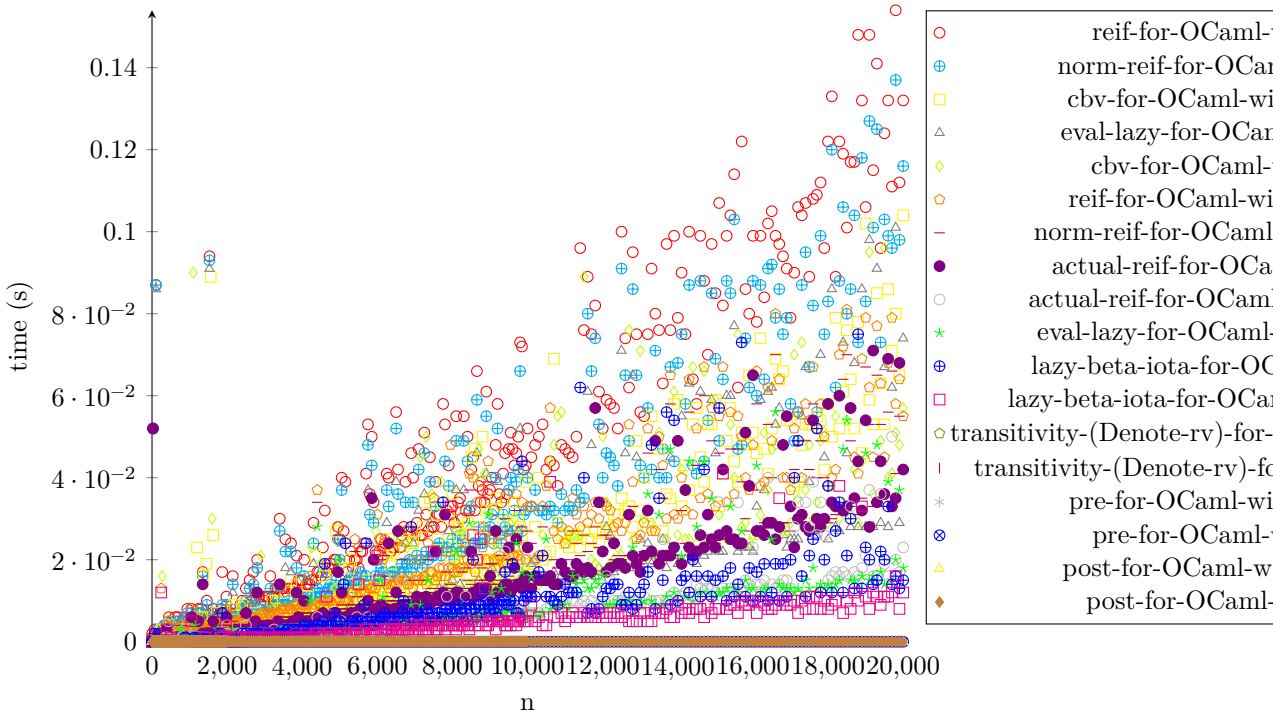
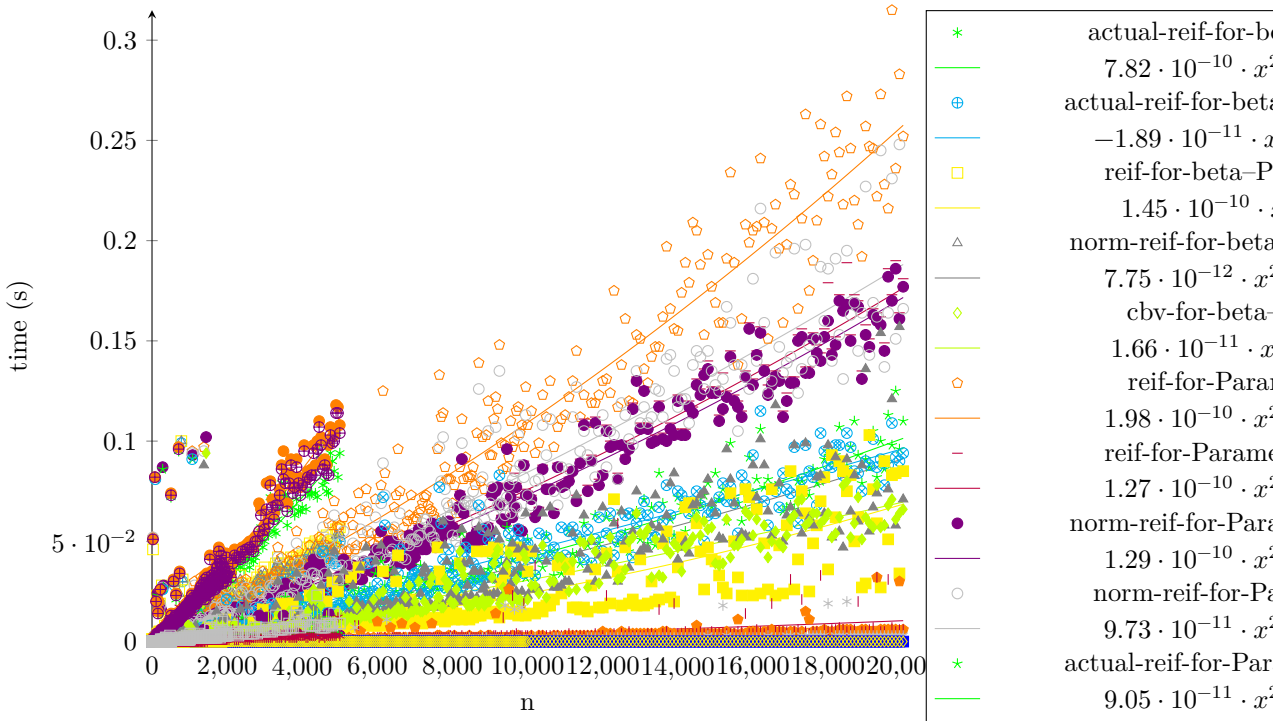


Figure 16: timing-Reify/OCaml


time (s)
0.3
0.25
0.2
0.15
0.1
5 · 10^−2
0
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
16,000
18,000
20,00
n
actual-reif-for-be
7.82 · 10^−10 · x
actual-reif-for-beta
−1.89 · 10^−11 · x
reif-for-beta–P
1.45 · 10^−10 ·
norm-reif-for-beta
7.75 · 10^−12 · x
cbv-for-beta-
1.66 · 10^−11 · x
reif-for-Para
1.98 · 10^−10 · x
reif-for-Parame
1.27 · 10^−10 · x
norm-reif-for-Para
1.29 · 10^−10 · x
norm-reif-for-Pa
9.73 · 10^−11 · x
actual-reif-for-Par
9.05 · 10^−11 · x
actual-reif-for-P
2.99 · 10^−11 · x
lazy-beta-iota-for-
1.02 · 10^−10 · x
eval-lazy-for-Pa
6.89 · 10^−11 · x
eval-lazy-for-Para
3.97 · 10^−11 · x
cbv-for-Parame
9.3 · 10^−12 · x
cbv-for-Para
1.14 · 10^−11 ·
lazy-beta-iota-for-
4.85 · 10^−11 · x
lazy-beta-iota-for-Pa
2.09 · 10^−12 · x
lazy-beta-iota-for-be
1.45 · 10^−10 · x
transitivity-(Denote-rv)-f
1.45 · 10^−10 · x
transitivity-(Denote-rv
1.45 · 10^−10 · x
transitivity-(Denote-rv)-f
1.45 · 10^−10 · x
transitivity-(Denote-rv
1.45 · 10^−10 · x
pre-for-beta–P
1.45 · 10^−10 · x
pre-for-beta-
1.45 · 10^−10 · x

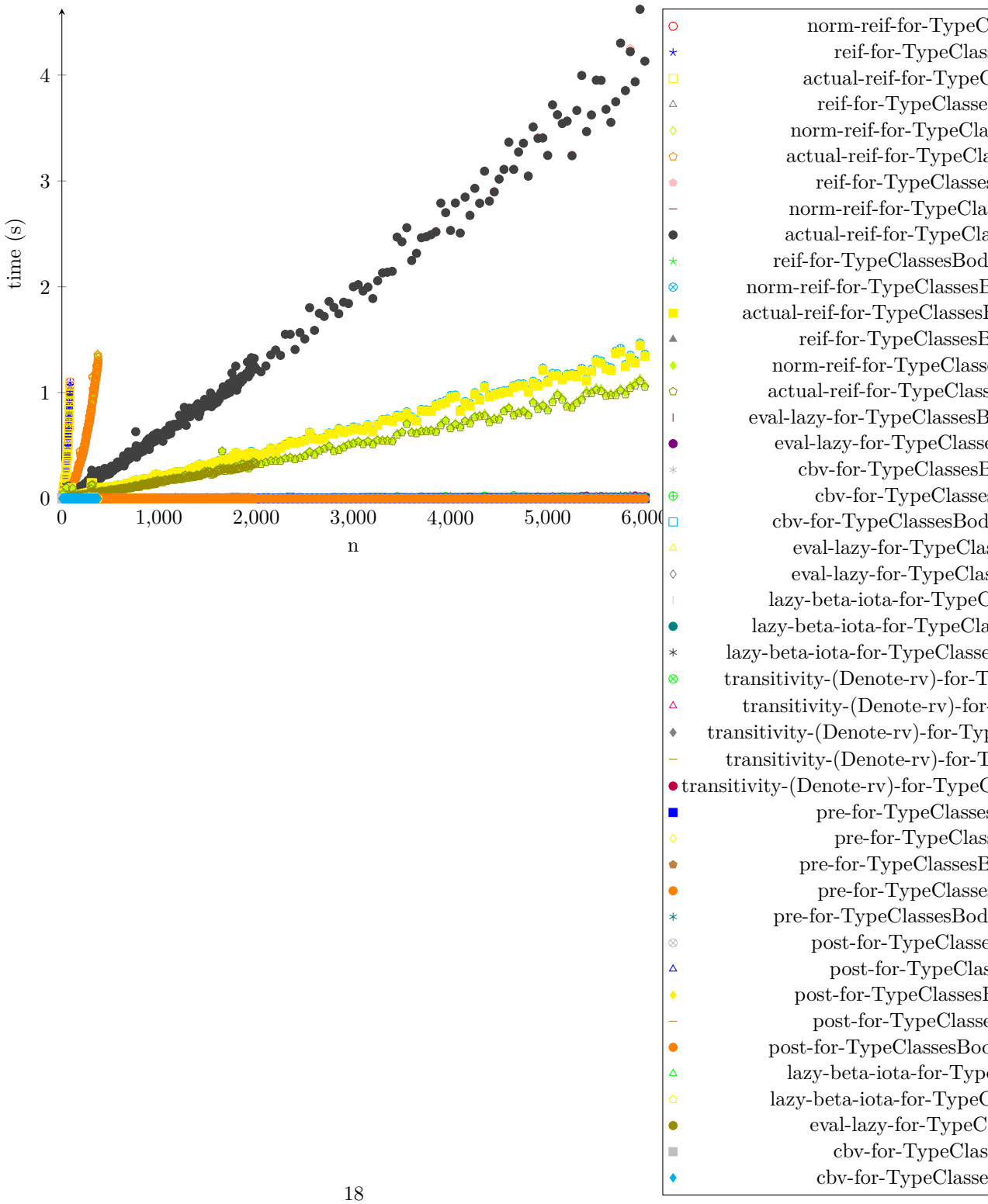


Figure 18: timing-Reify/TypeClasses

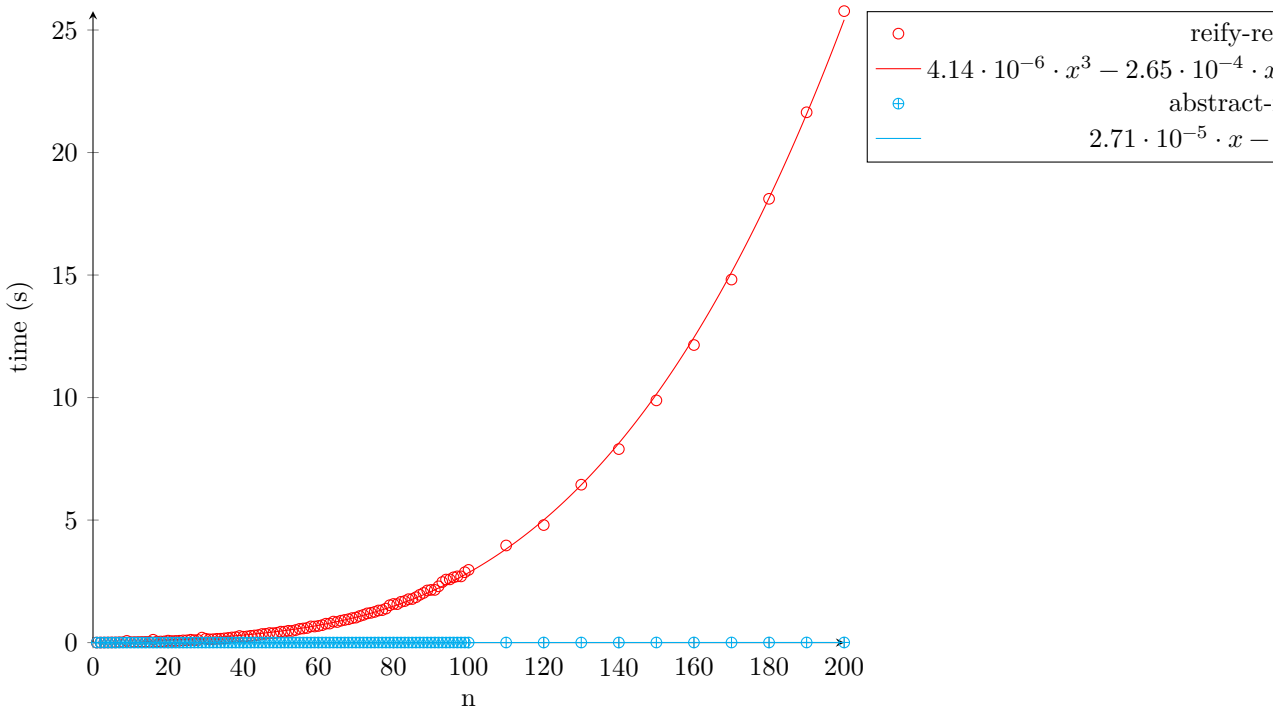


Figure 19: timing-typeclass-reification-let-in-HOAS

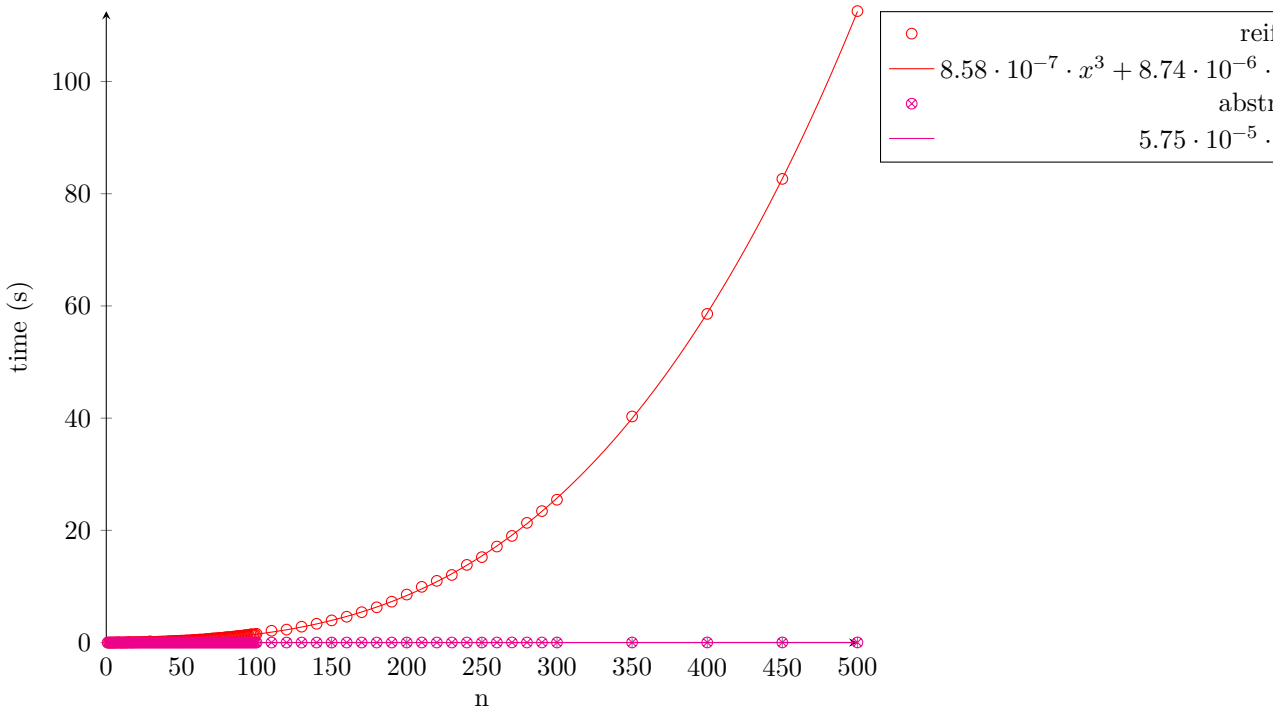


Figure 20: timing-typeclass-reification-let-in-PHOAS

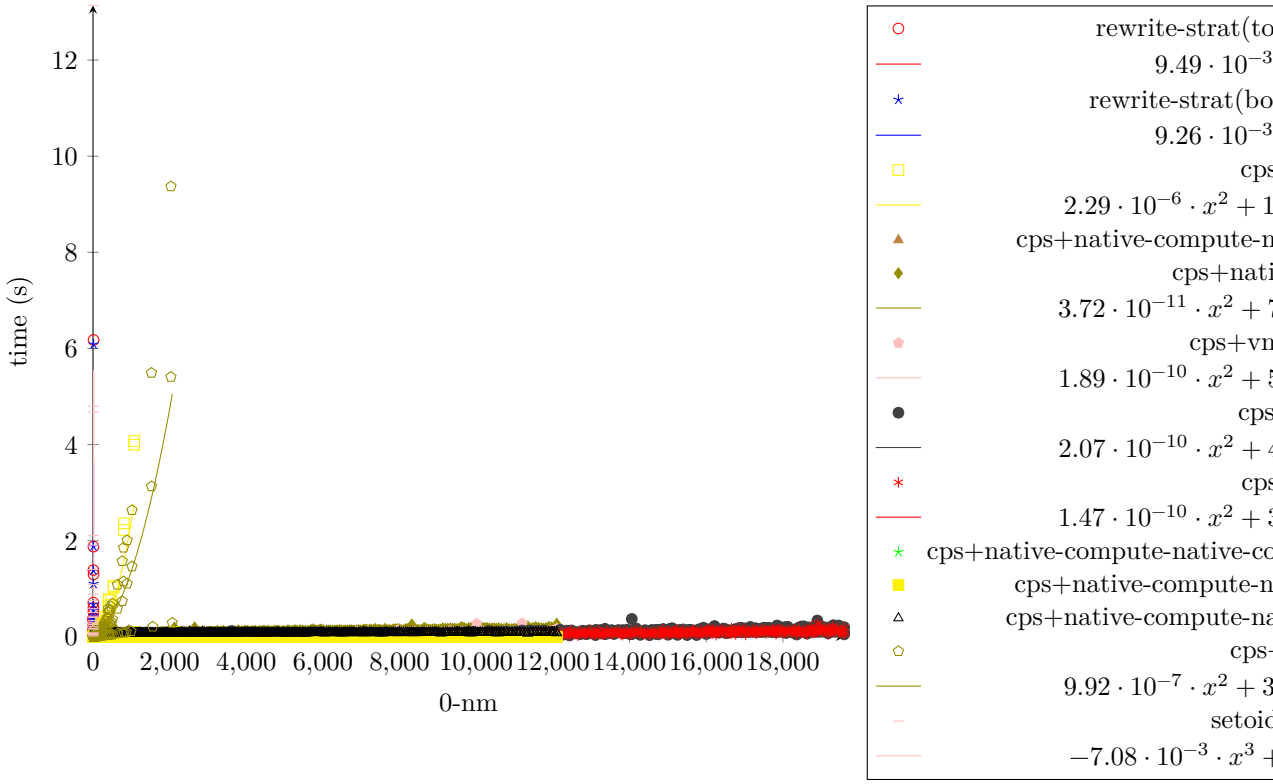


Figure 21: timing-rewrite-lift-lets-map param-1-n 1, param-2-m 1

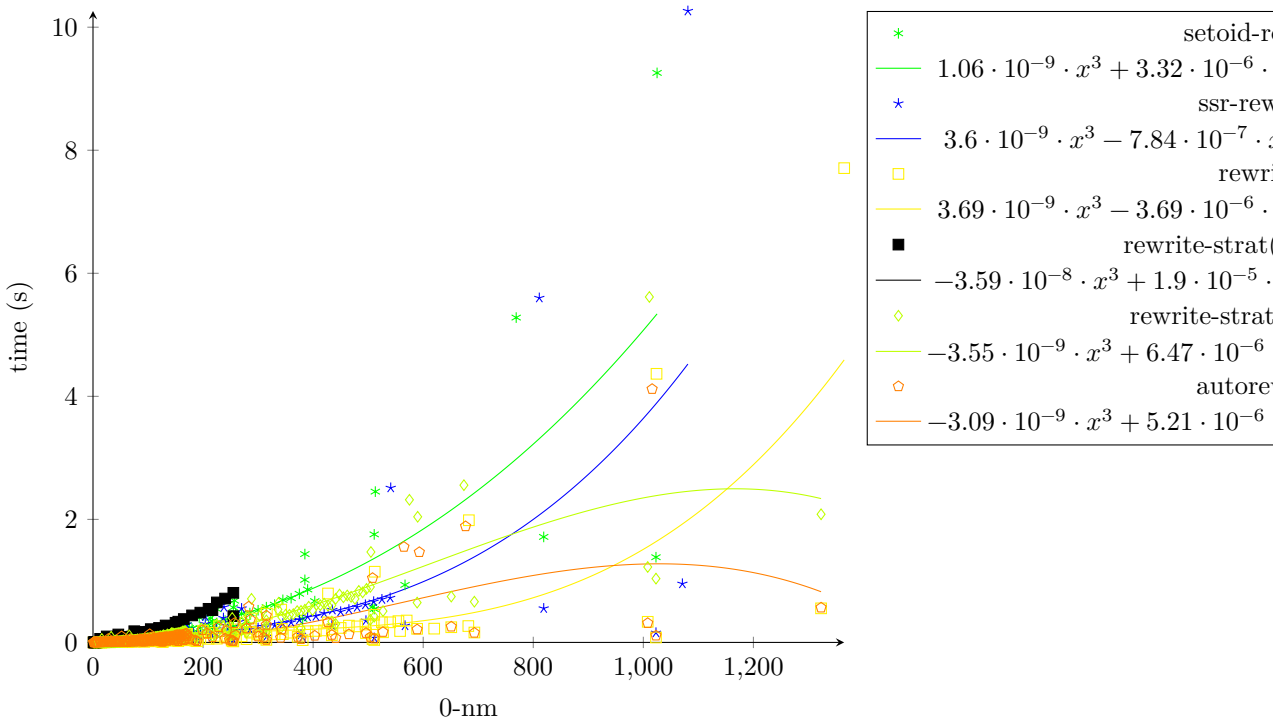


Figure 22: timing-rewrite-plus-0-tree param-1-n 0, param-2-m 1, param-3-input-size 5, param-4-output-size 3, param-5-num-rewrites 1

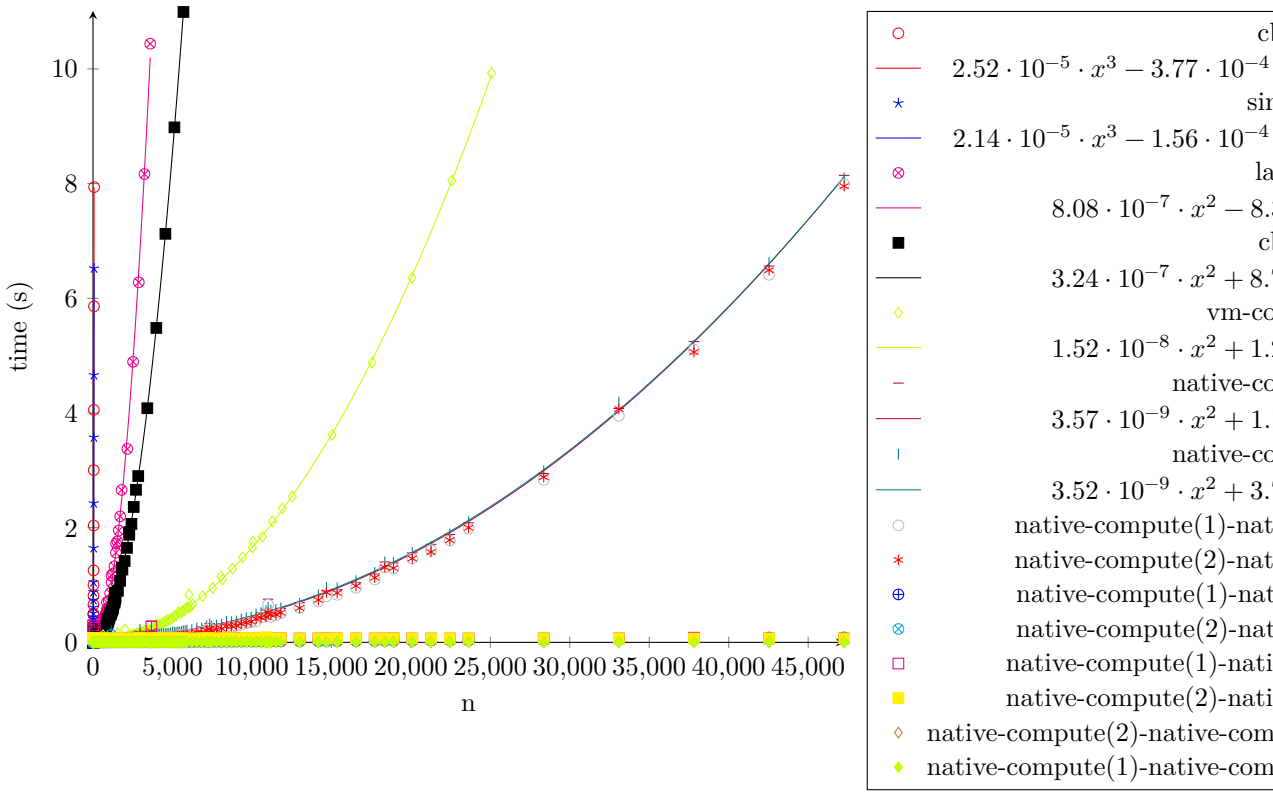


Figure 23: timing-sieve-of-eratosthenes

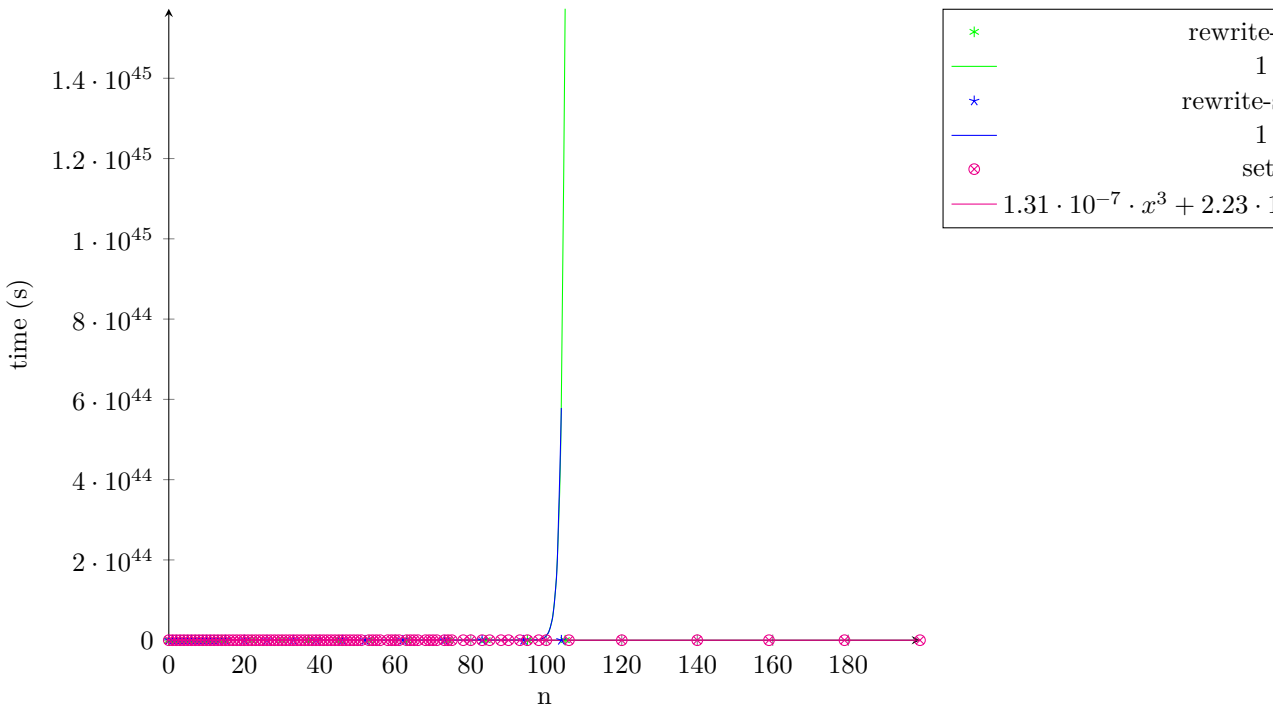


Figure 24: timing-rewrite-under-lets-plus-0

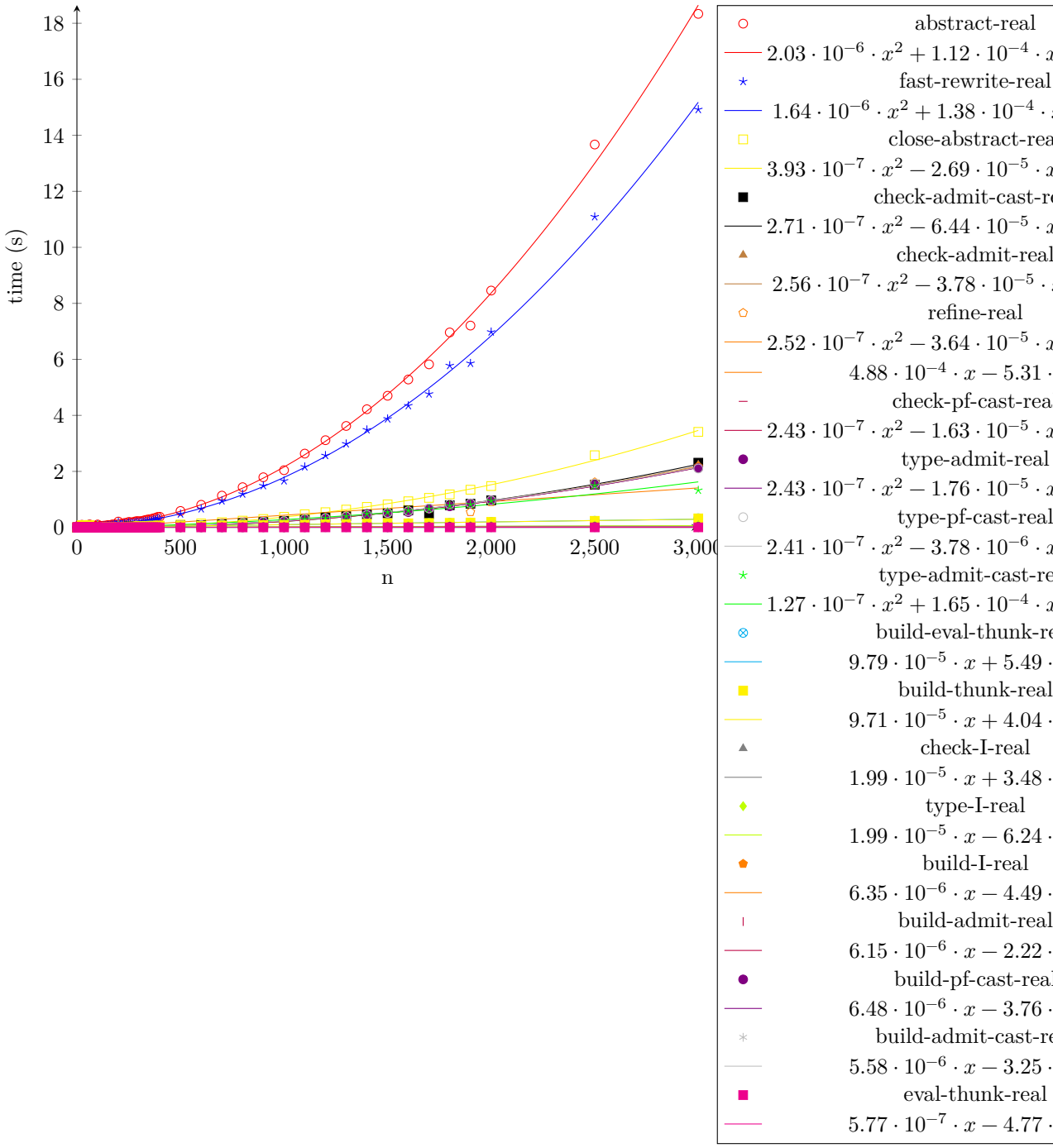
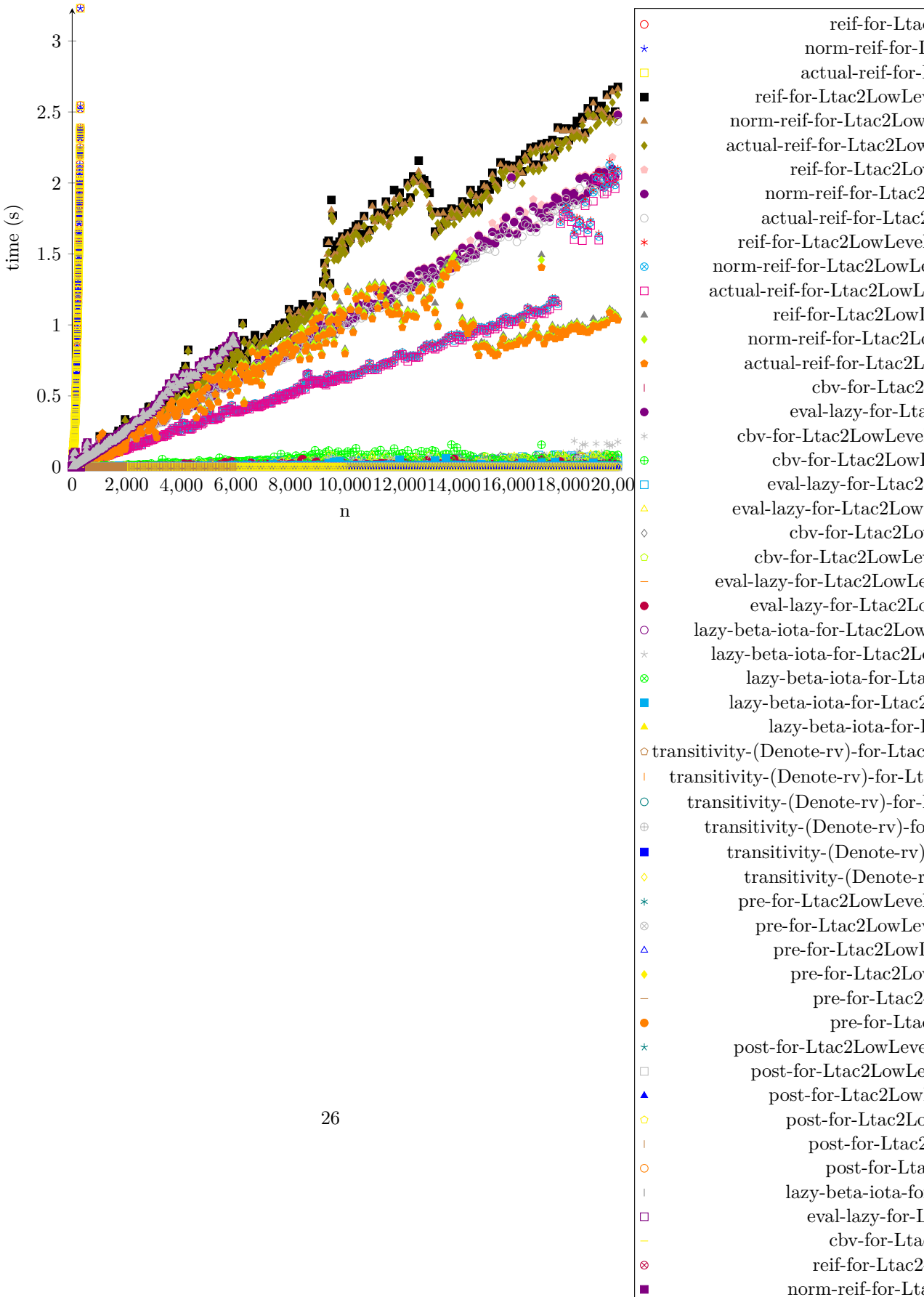


Figure 25: timing-rewrite-repeated-app-fast-rewrite-ltac2


time (s)
n
0
0.5
1
1.5
2
2.5
3
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
16,000
18,000
20,00
reif-for-Ltac
norm-reif-for-
actual-reif-for-
reif-for-Ltac2LowLe
norm-reif-for-Ltac2Low
actual-reif-for-Ltac2Low
reif-for-Ltac2Lo
norm-reif-for-Ltac2
actual-reif-for-Ltac2
reif-for-Ltac2LowLevel
norm-reif-for-Ltac2LowL
actual-reif-for-Ltac2LowL
reif-for-Ltac2LowL
norm-reif-for-Ltac2L
actual-reif-for-Ltac2L
cbv-for-Ltac2
eval-lazy-for-Lta
cbv-for-Ltac2LowLeve
cbv-for-Ltac2Low
eval-lazy-for-Ltac2
eval-lazy-for-Ltac2Low
cbv-for-Ltac2Lo
cbv-for-Ltac2LowLe
eval-lazy-for-Ltac2LowLe
eval-lazy-for-Ltac2L
lazy-beta-iota-for-Ltac2Low
lazy-beta-iota-for-Ltac2L
lazy-beta-iota-for-Lta
lazy-beta-iota-for-Ltac2
lazy-beta-iota-for-
transitivity-(Denote-rv)-for-Ltac
transitivity-(Denote-rv)-for-Lt
transitivity-(Denote-rv)-for-
transitivity-(Denote-rv)-fo
transitivity-(Denote-rv)
transitivity-(Denote-r
pre-for-Ltac2LowLevel
pre-for-Ltac2LowLe
pre-for-Ltac2LowL
pre-for-Ltac2Lo
pre-for-Ltac2
pre-for-Lta
post-for-Ltac2LowLeve
post-for-Ltac2LowLe
post-for-Ltac2Low
post-for-Ltac2L
post-for-Ltac2
post-for-Lta
lazy-beta-iota-fo
eval-lazy-for-
cbv-for-Lta
reif-for-Ltac2
norm-reif-for-Lta