time (s)

80

70

60

50

40

30

20

10

0   50   100   150   200   250   300   350   400

binders

<div>

○ repeat re

— $8.83 \cdot 10^{-5}(\# \text{ binders})^3 - 1.96$

★ repeat re

— $9.18 \cdot 10^{-5}(\# \text{ binders})^3 - 2.19$

∗ repea

— $1.52 \cdot 10^{-6}(\# \text{ binders})^3 -$

○ repeat re

— $8.83 \cdot 10^{-5}(\# \text{ binders})^3 - 1.96$

★ repeat re

— $9.18 \cdot 10^{-5}(\# \text{ binders})^3 - 2.19$

∗ repea

— $1.52 \cdot 10^{-6}(\# \text{ binders})^3 -$

⊕ repeat rewrit

— $4.54 \cdot 10^{-7}(\# \text{ binders})^3 + 1.16$

⊗ repeat rewri

— $4.54 \cdot 10^{-7}(\# \text{ binders})^3 + 1.16$

□ repeat se

— $7.69 \cdot 10^{-7}(\# \text{ binders})^3 - 6.62$

</div>

Figure 1: Timing of `rewrite_strat` and `setoid_rewrite` under binders
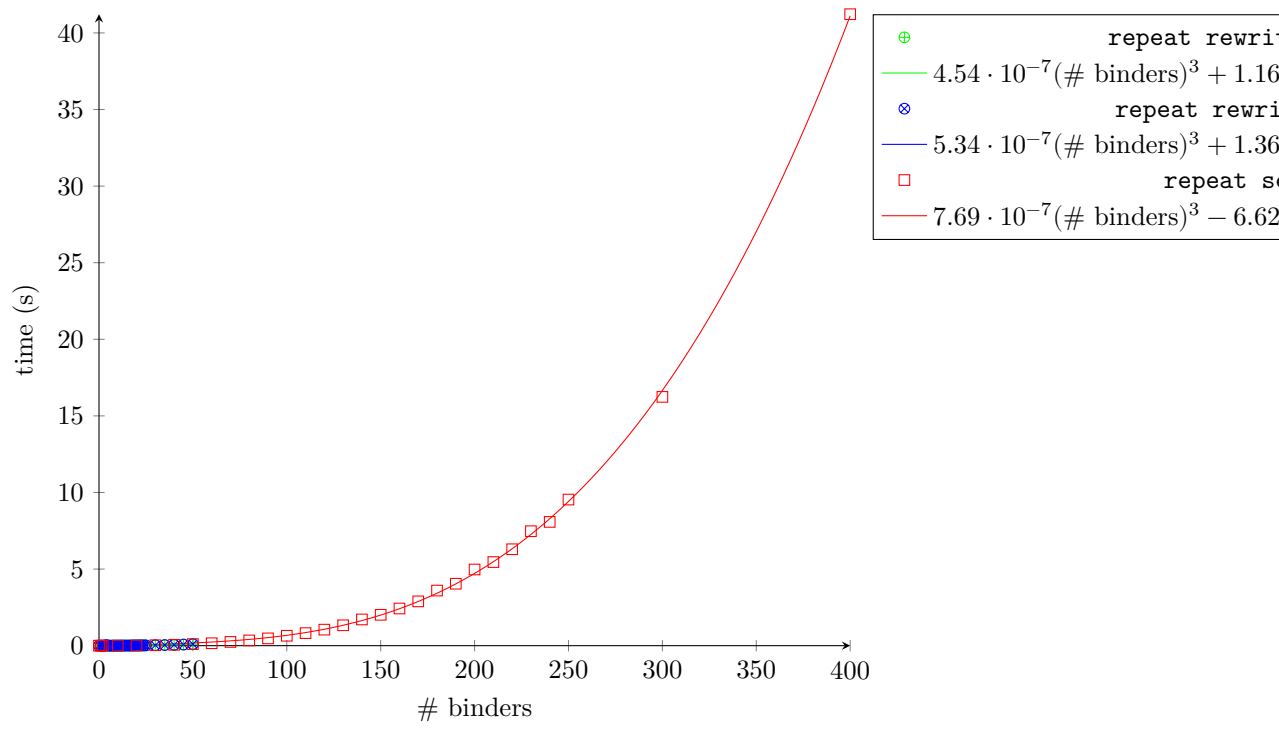
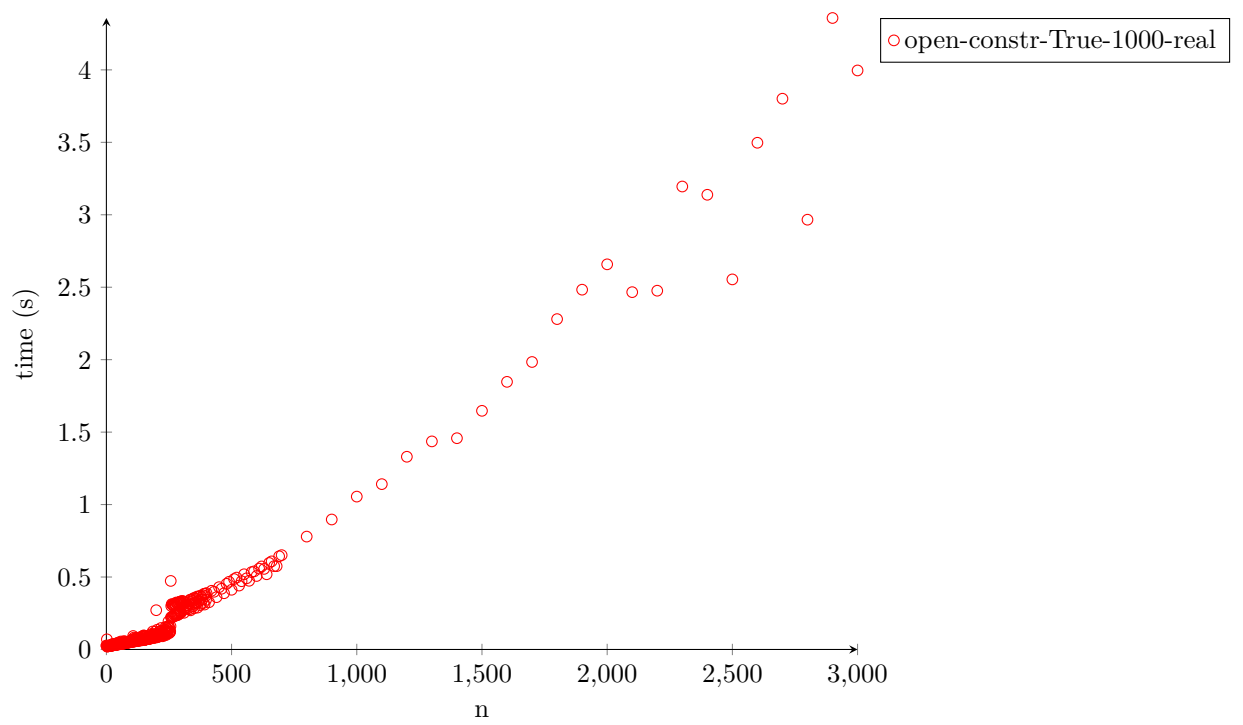Figure 2: Timing of `rewrite_strat` and `setoid_rewrite` under binders
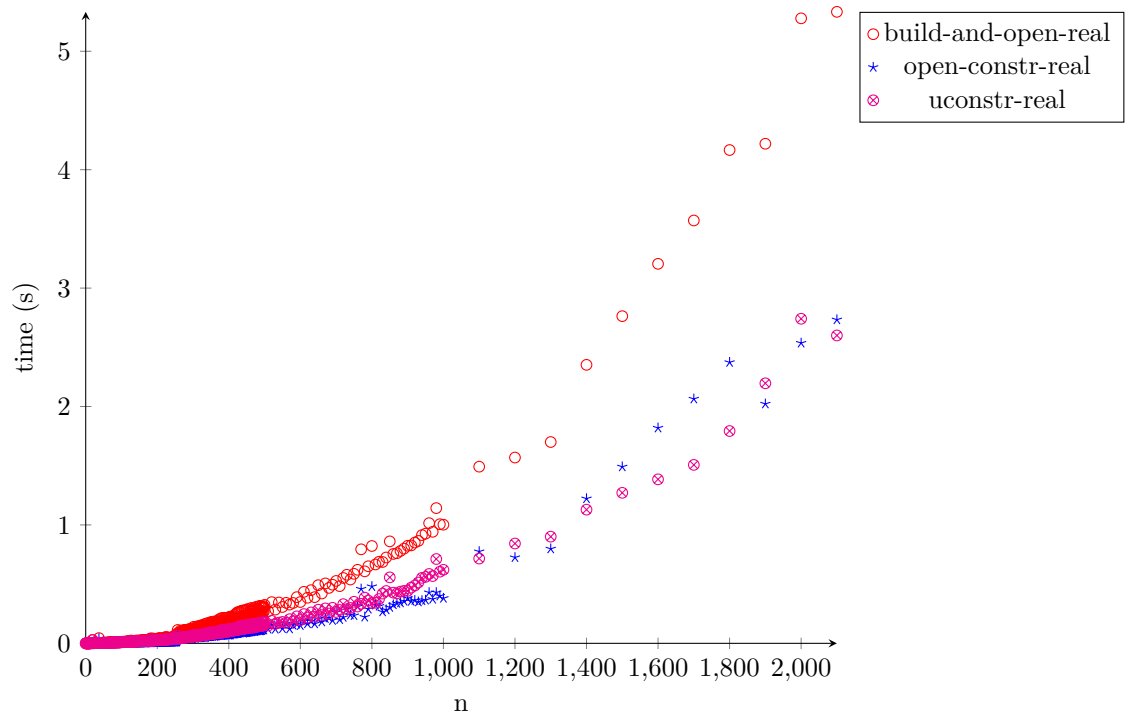
Figure 3: timing-do-n-open-constr-True

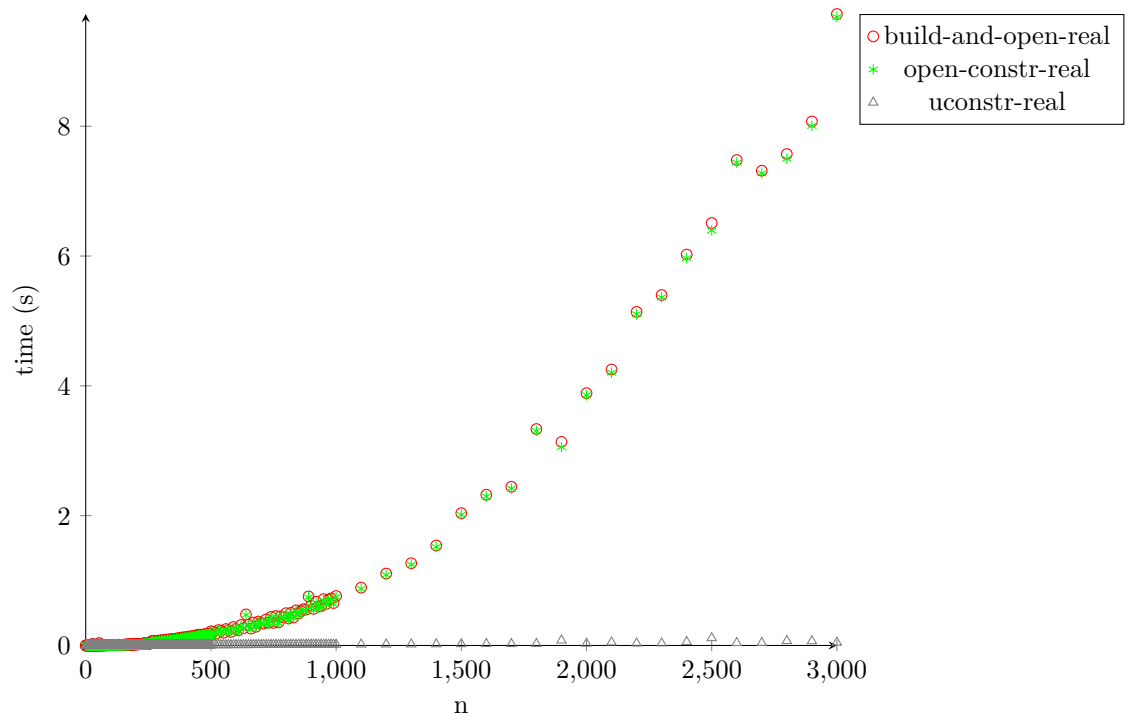Figure 4: timing-open-constr-n-lambda-no-types-different-names

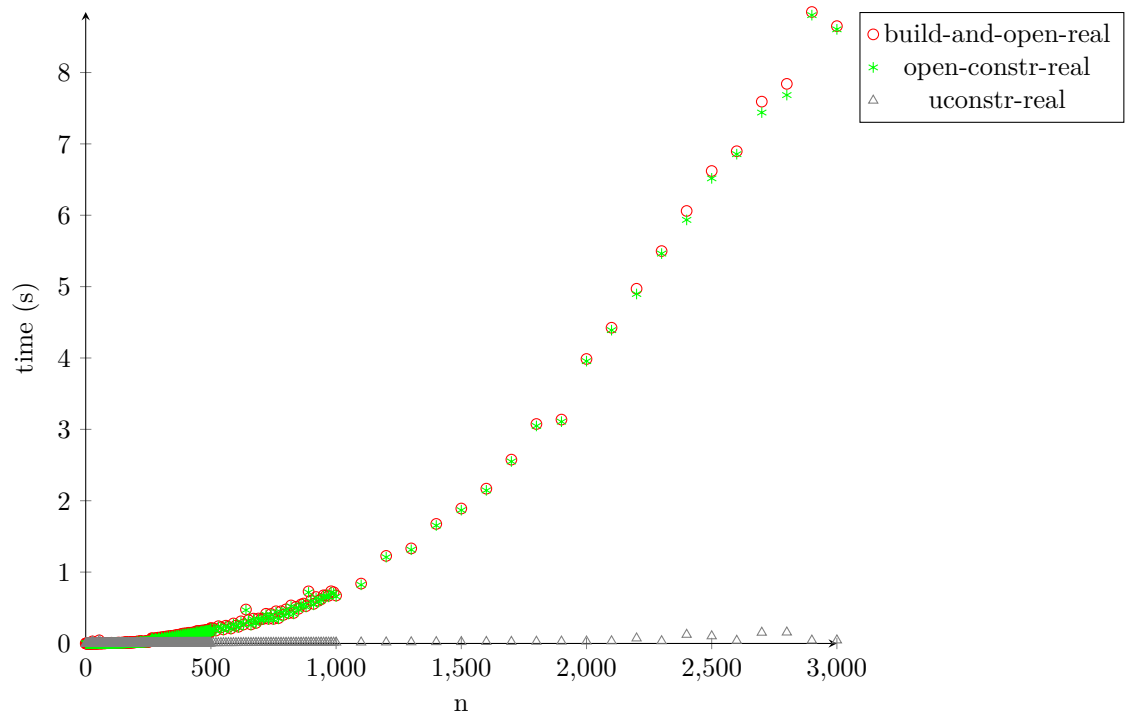Figure 5: timing-open-constr-n-lambda-no-types-no-names

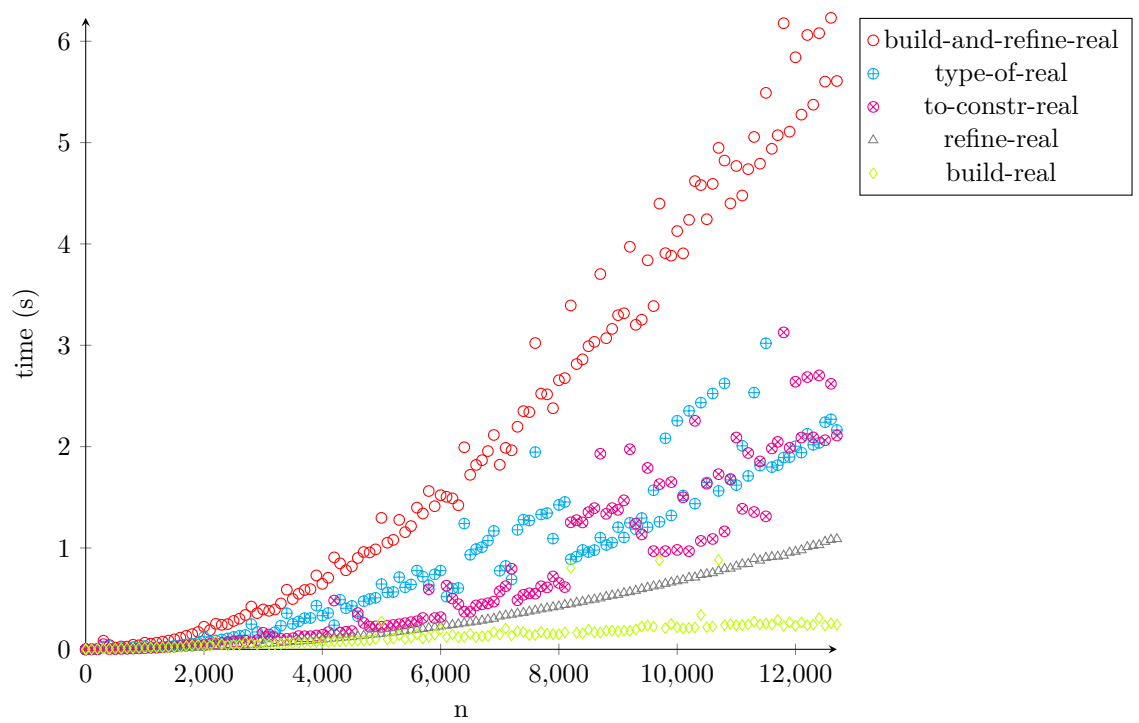Figure 6: timing-open-constr-n-lambda-no-types-same-names
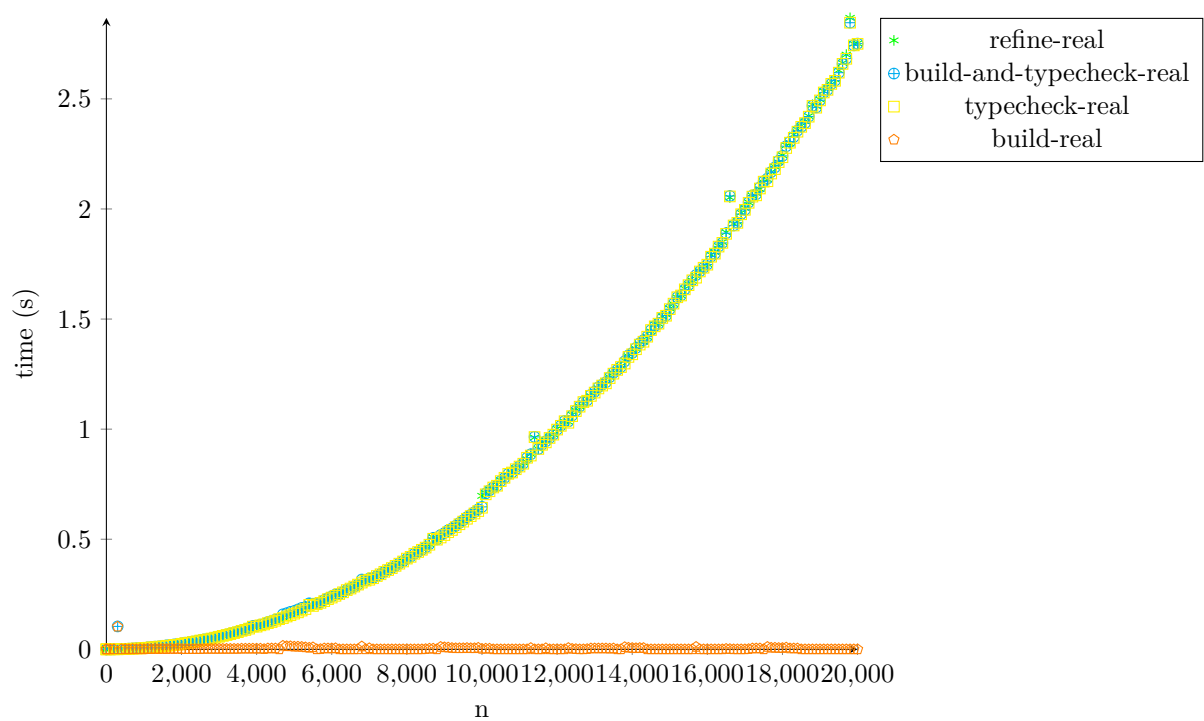
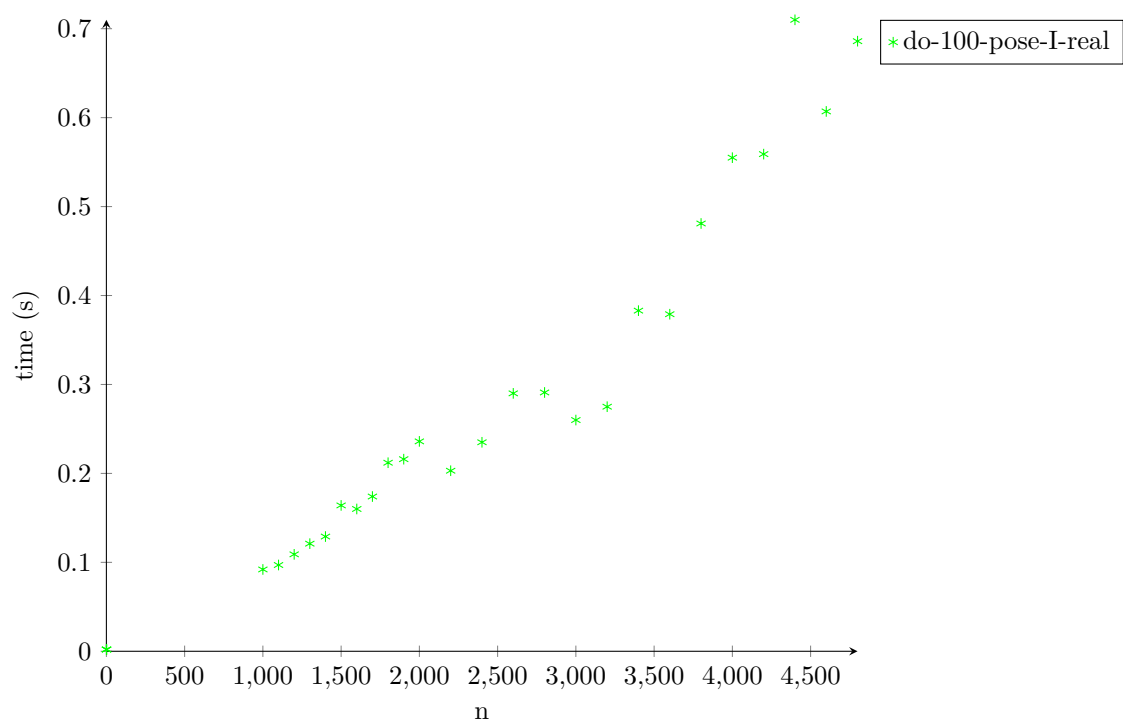Figure 7: timing-app-n-uconstr

Figure 8: timing-app-n-ltac2
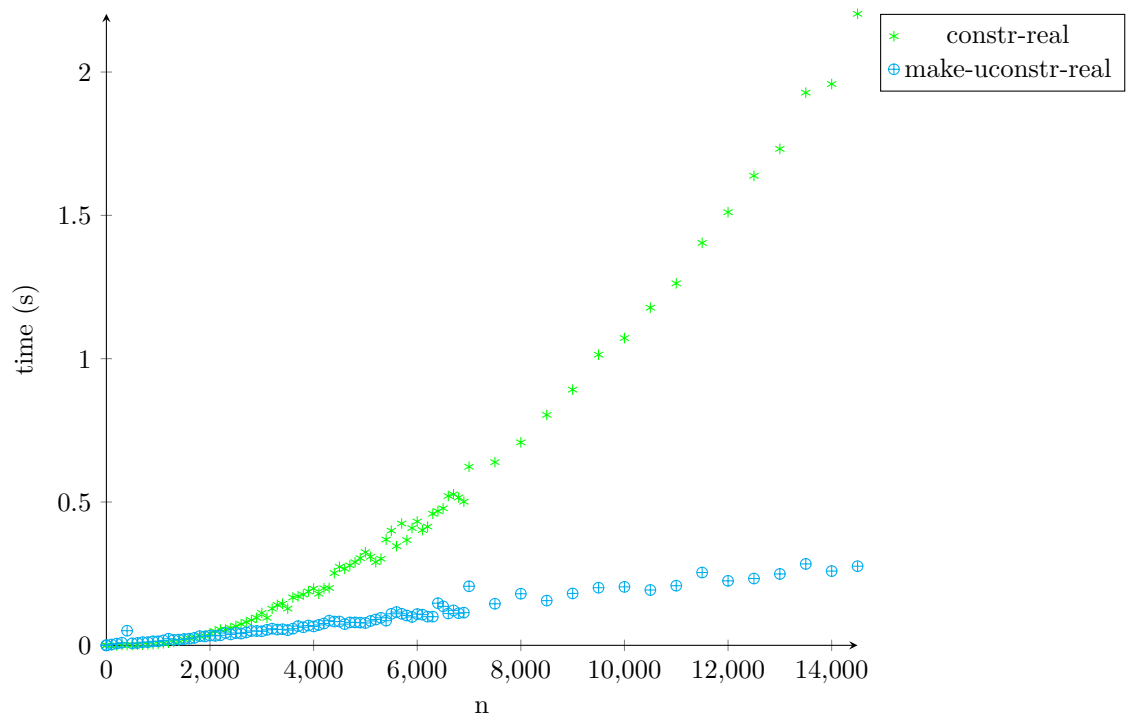
Figure 9: timing-do-n-pose
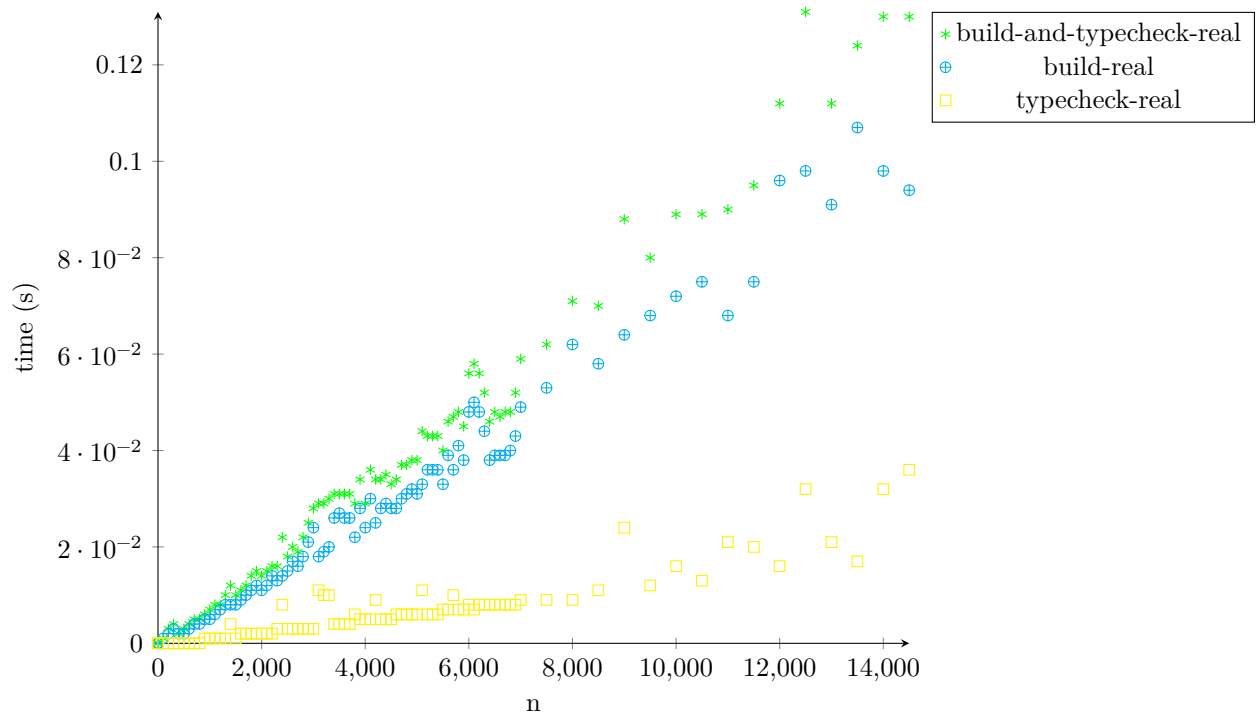
Figure 10: timing-let-n-uconstr
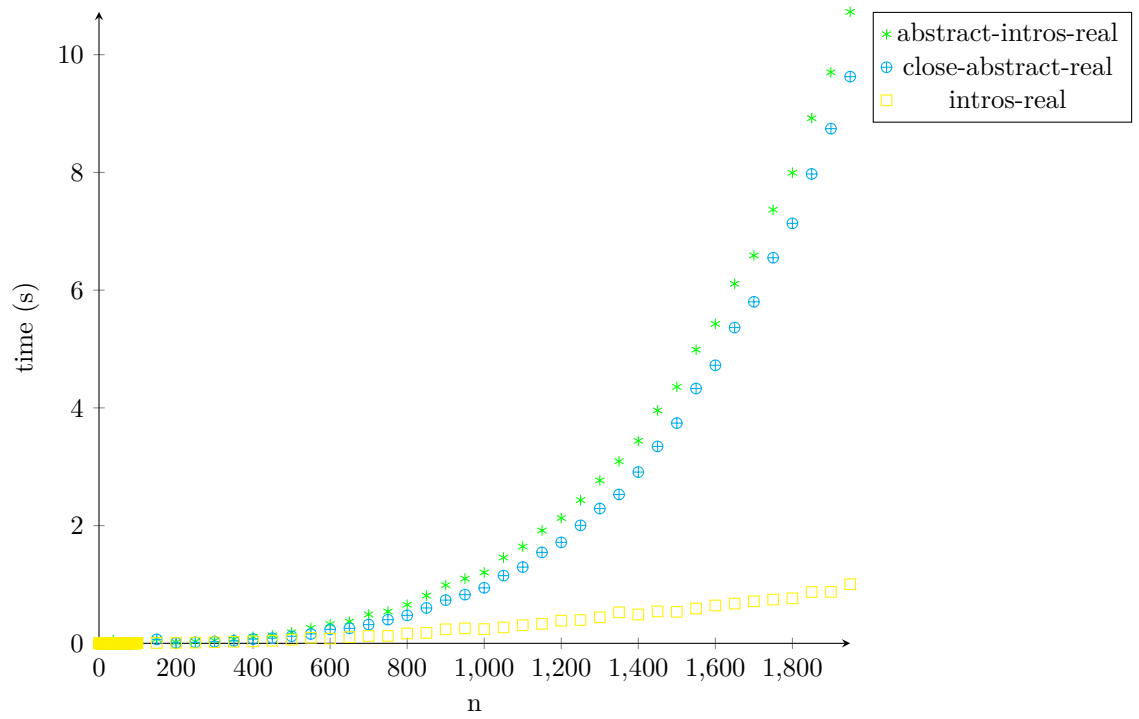
Figure 11: timing-let-n-ltac2
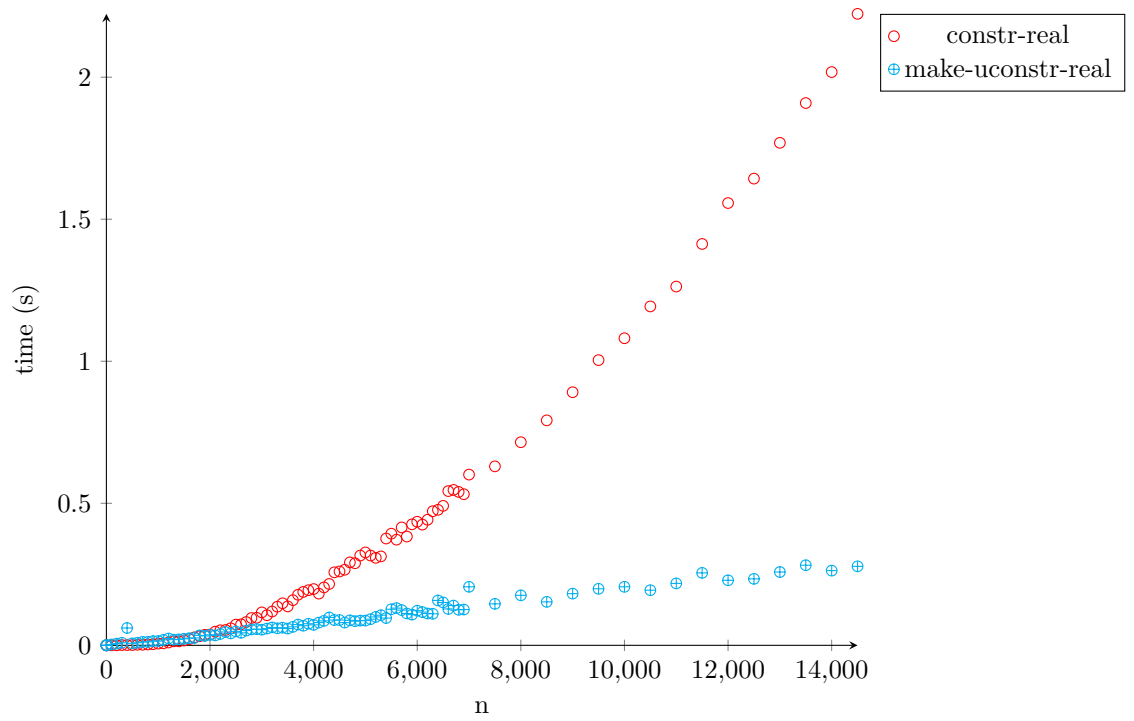
Figure 12: timing-intros-n-let
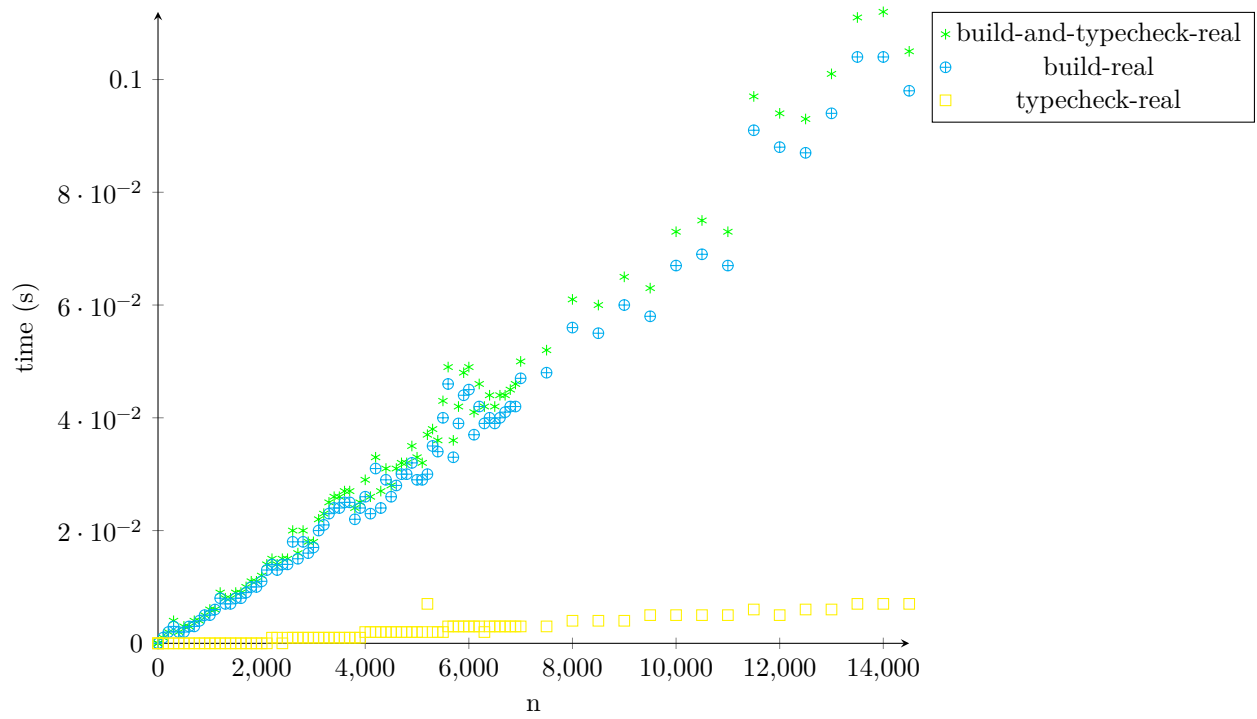
Figure 13: timing-fun-n-uconstr
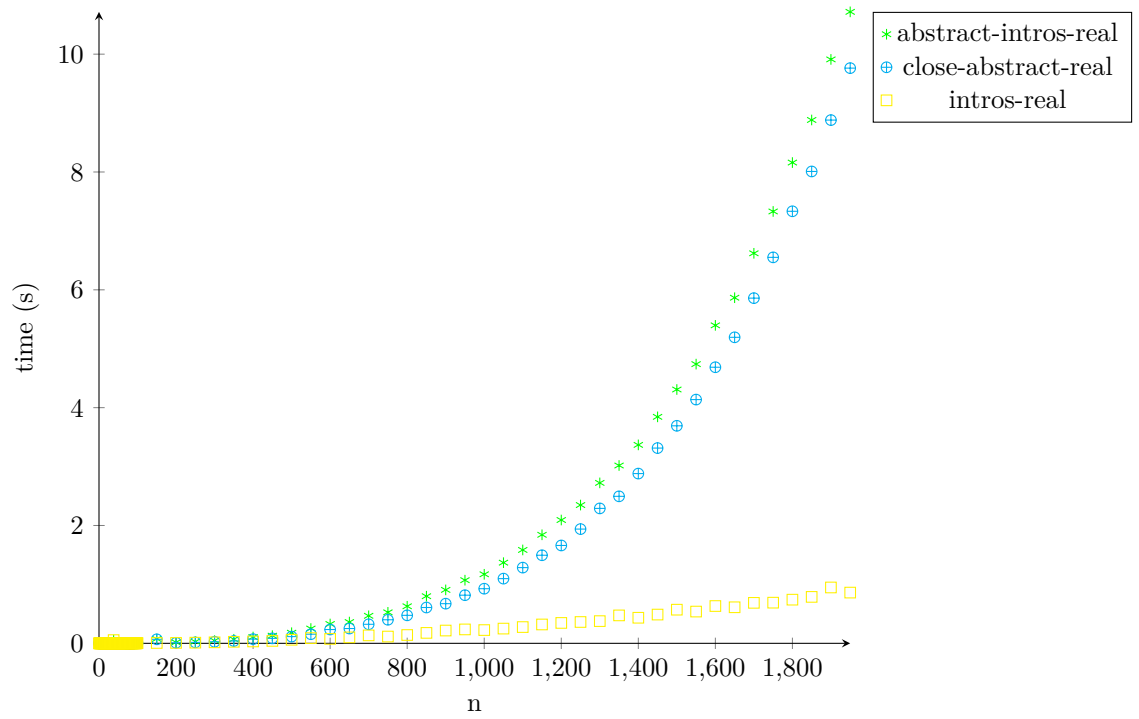
Figure 14: timing-fun-n-ltac2
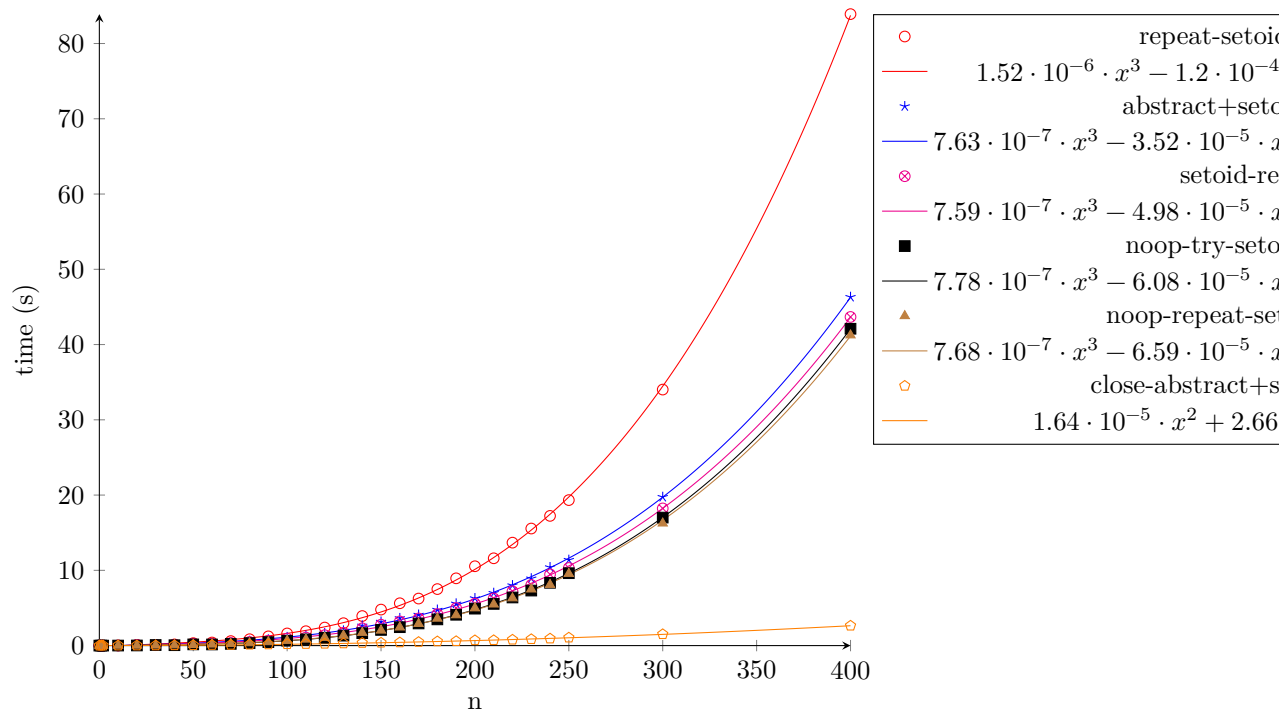
Figure 15: timing-intros-n-fun

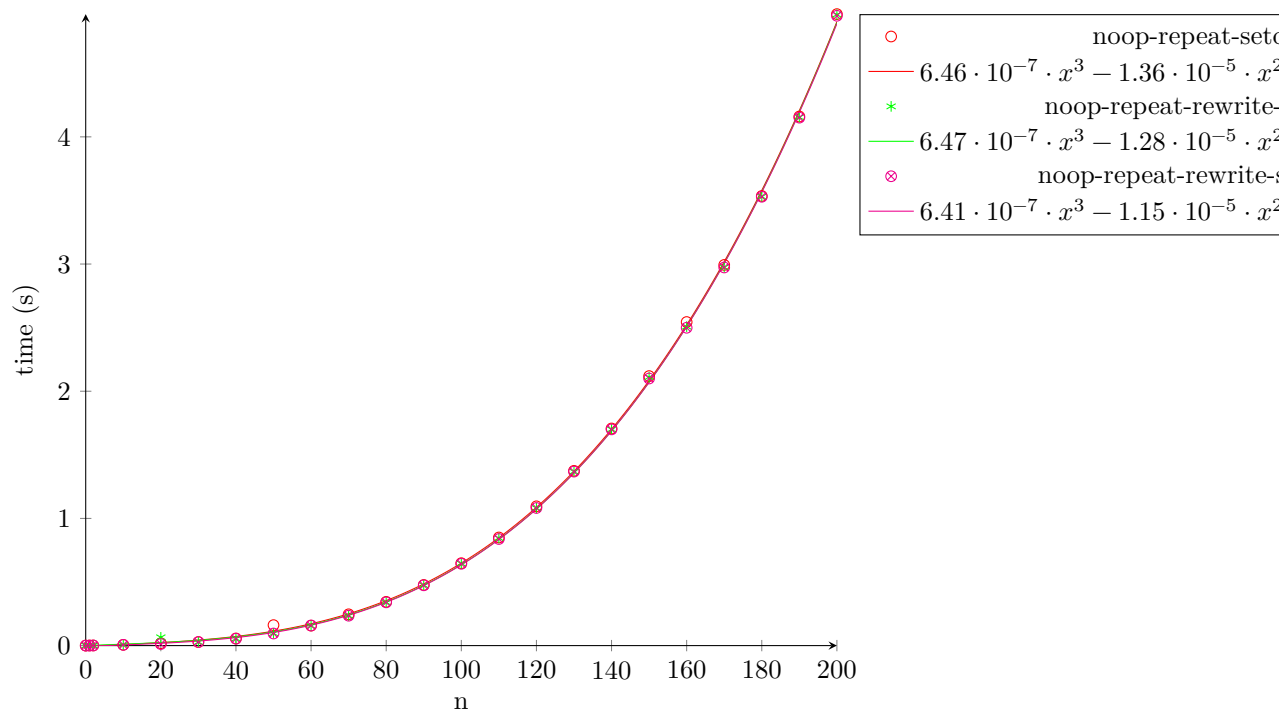Figure 16: timing-repeat-setoid-rewrite-under-binders

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Figure 17: timing-repeat-setoid-rewrite-under-binders-noop
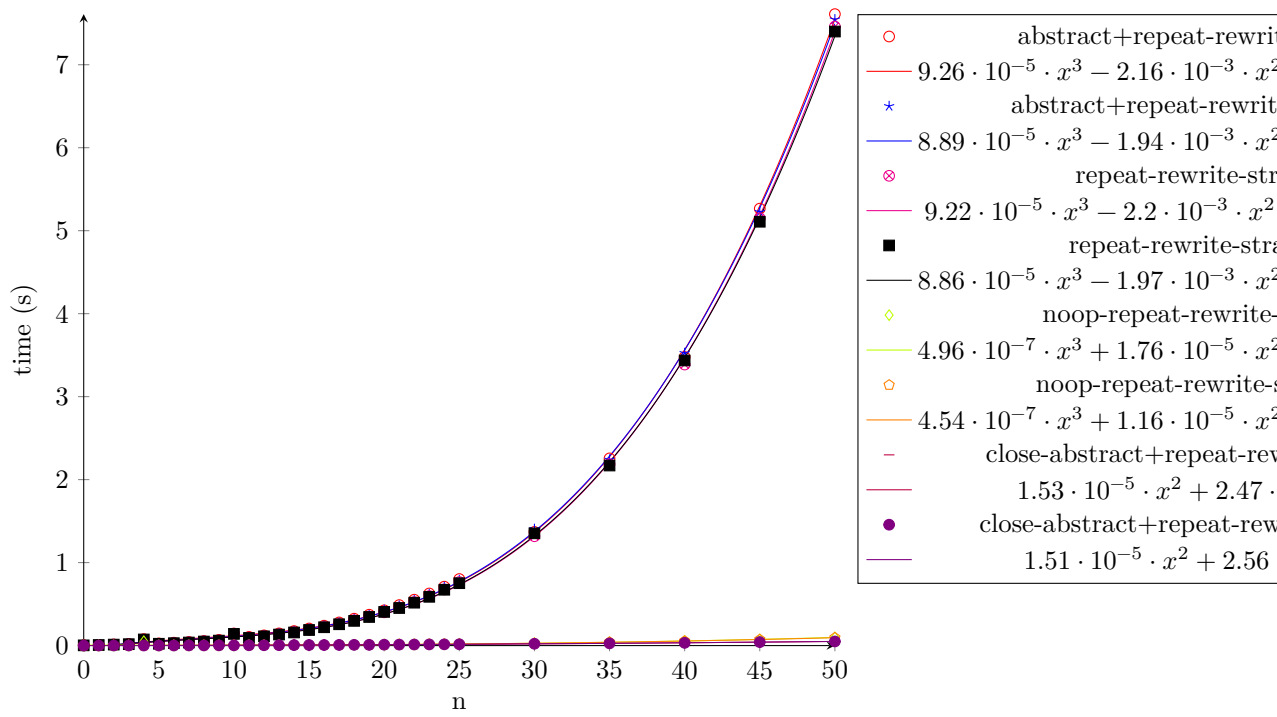
17

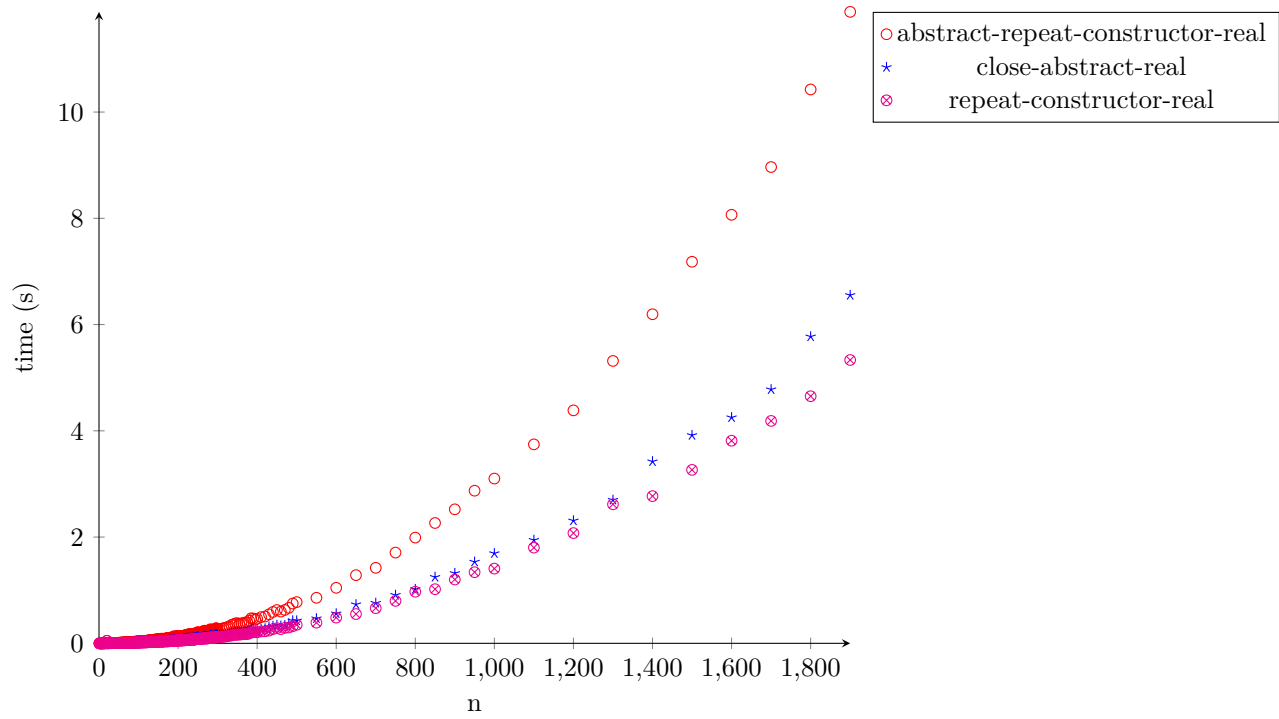Figure 18: timing-rewrite-strat-under-binders
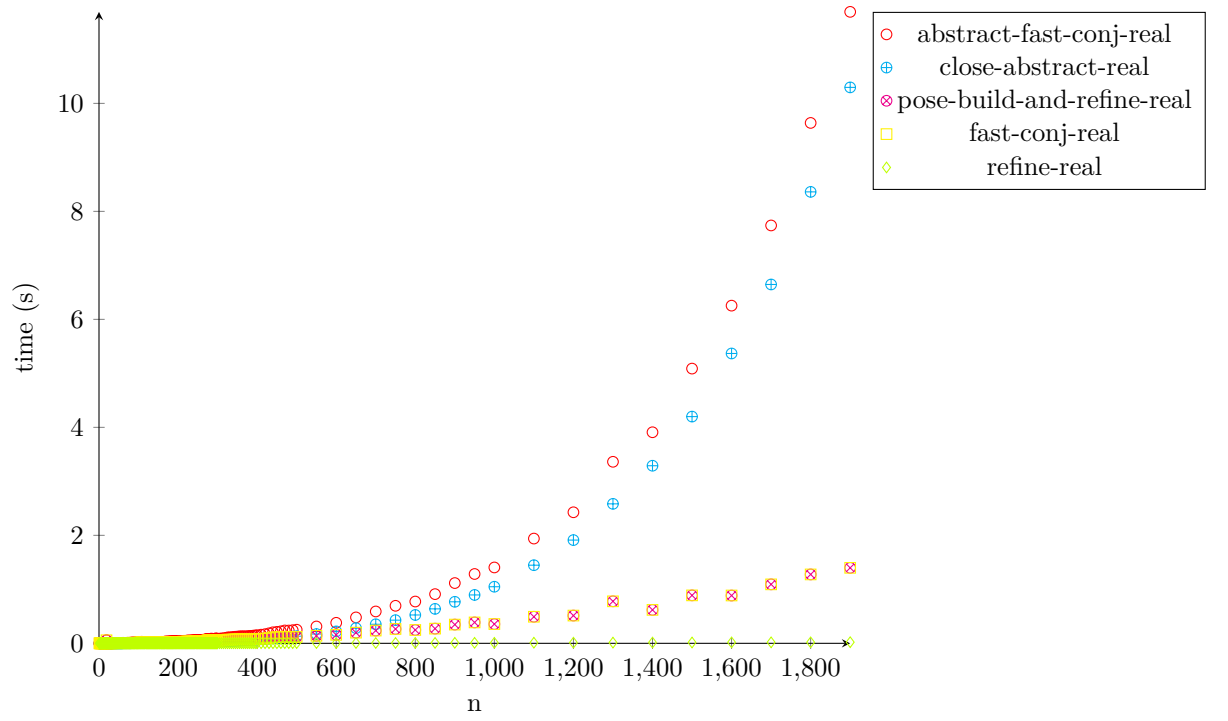
Figure 19: timing-conj-True-repeat-constructor

Figure 20: timing-conj-True-fast-conj

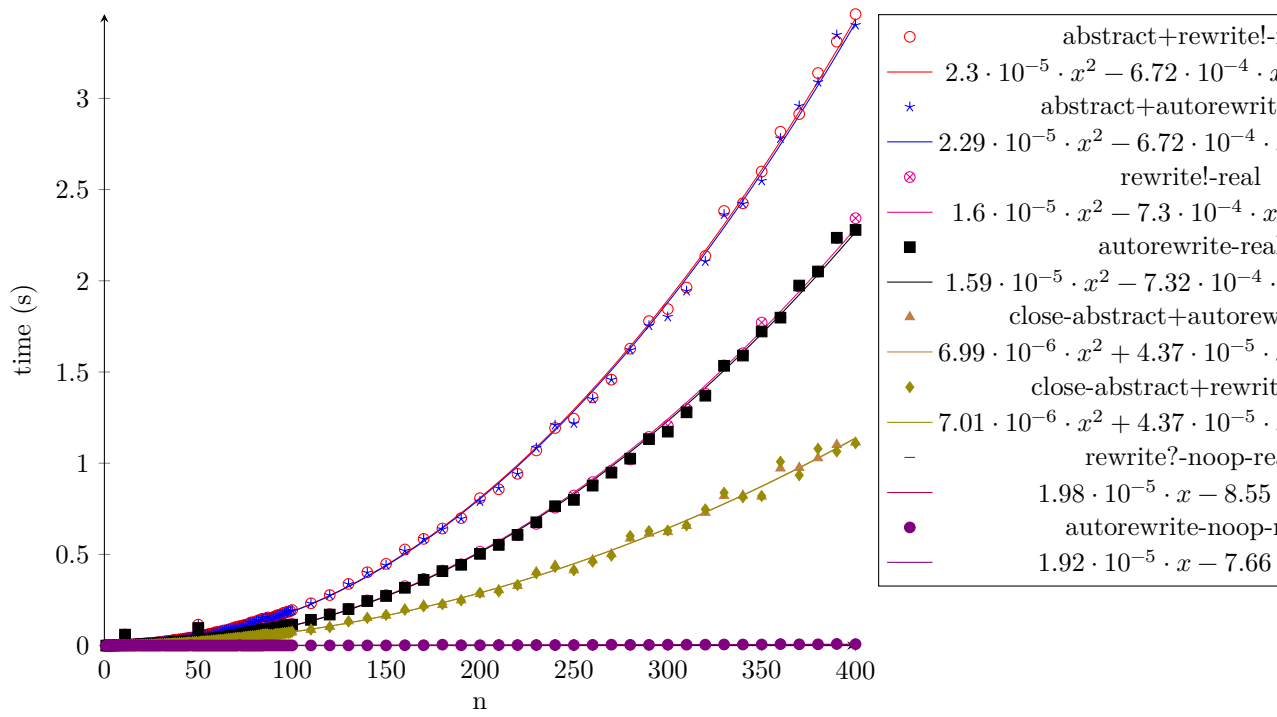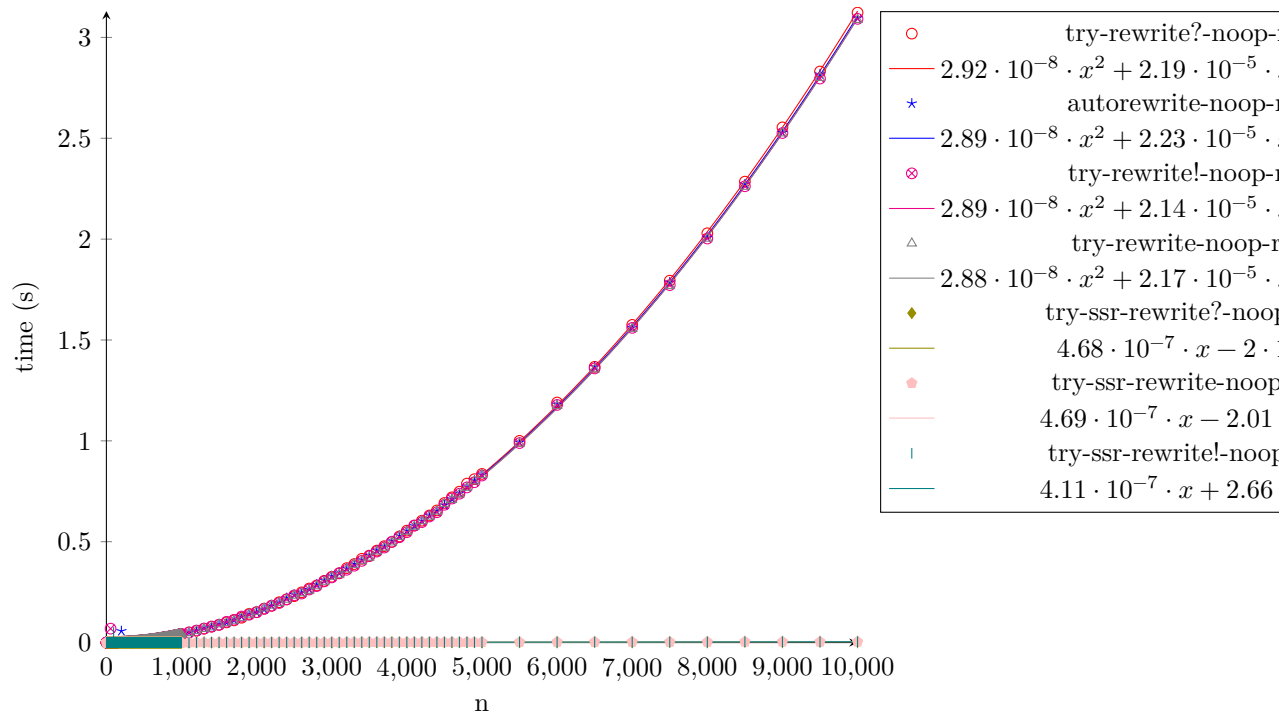Figure 21: timing-rewrite-repeated-app-autorewrite

The figure contains the following legend entries and fitted curves:

- abstract+rewrite!- : $2.3 \cdot 10^{-5} \cdot x^2 - 6.72 \cdot 10^{-4} \cdot x$
- abstract+autorewrite : $2.29 \cdot 10^{-5} \cdot x^2 - 6.72 \cdot 10^{-4} \cdot x$
- rewrite!-real : $1.6 \cdot 10^{-5} \cdot x^2 - 7.3 \cdot 10^{-4} \cdot x$
- autorewrite-real : $1.59 \cdot 10^{-5} \cdot x^2 - 7.32 \cdot 10^{-4} \cdot x$
- close-abstract+autorewrite : $6.99 \cdot 10^{-6} \cdot x^2 + 4.37 \cdot 10^{-5} \cdot x$
- close-abstract+rewrite : $7.01 \cdot 10^{-6} \cdot x^2 + 4.37 \cdot 10^{-5} \cdot x$
- rewrite?-noop-real : $1.98 \cdot 10^{-5} \cdot x - 8.55$
- autorewrite-noop-real : $1.92 \cdot 10^{-5} \cdot x - 7.66$

Figure 22: timing-rewrite-repeated-app-autorewrite-noop

The plot shows time (s) on the vertical axis versus n on the horizontal axis, with the following legend entries:

- try-rewrite?-noop-
- $2.92 \cdot 10^{-8} \cdot x^2 + 2.19 \cdot 10^{-5} \cdot$
- autorewrite-noop-
- $2.89 \cdot 10^{-8} \cdot x^2 + 2.23 \cdot 10^{-5} \cdot$
- try-rewrite!-noop-
- $2.89 \cdot 10^{-8} \cdot x^2 + 2.14 \cdot 10^{-5} \cdot$
- try-rewrite-noop-
- $2.88 \cdot 10^{-8} \cdot x^2 + 2.17 \cdot 10^{-5} \cdot$
- try-ssr-rewrite?-noop
- $4.68 \cdot 10^{-7} \cdot x - 2 \cdot$
- try-ssr-rewrite-noop
- $4.69 \cdot 10^{-7} \cdot x - 2.01$
- try-ssr-rewrite!-noop
- $4.11 \cdot 10^{-7} \cdot x + 2.66$
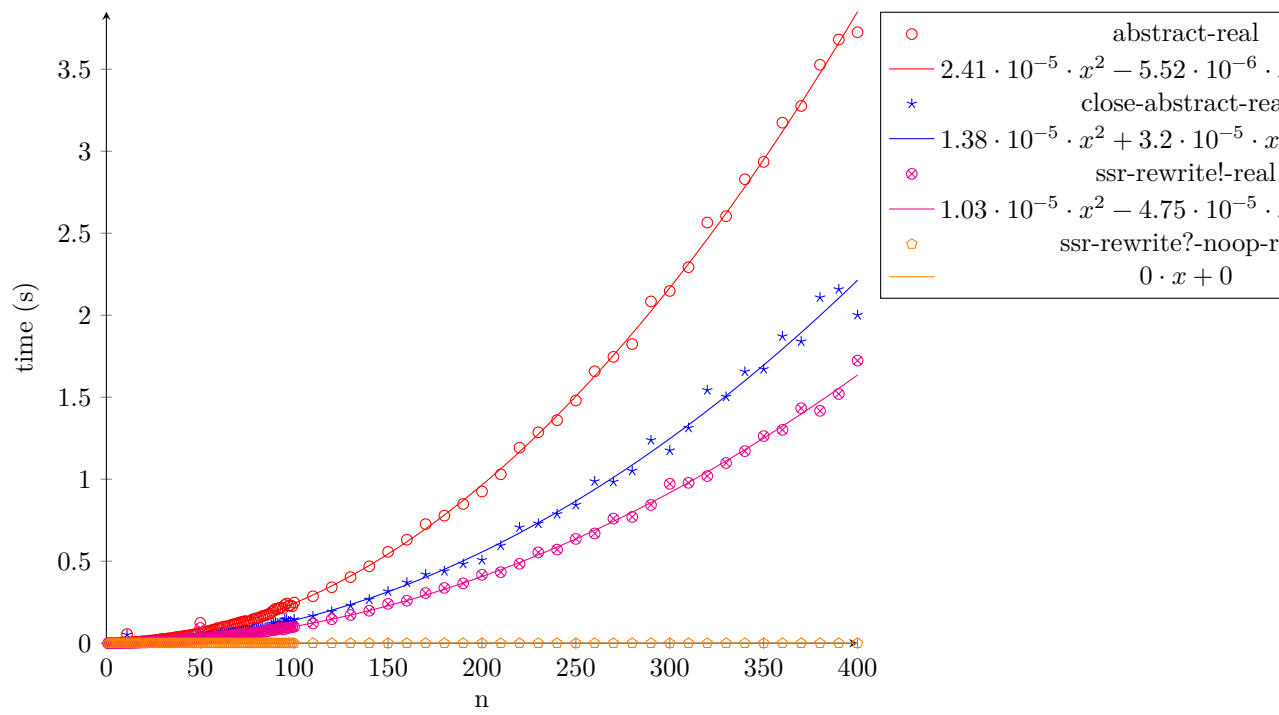
Figure 23: timing-rewrite-repeated-app-ssrrewrite

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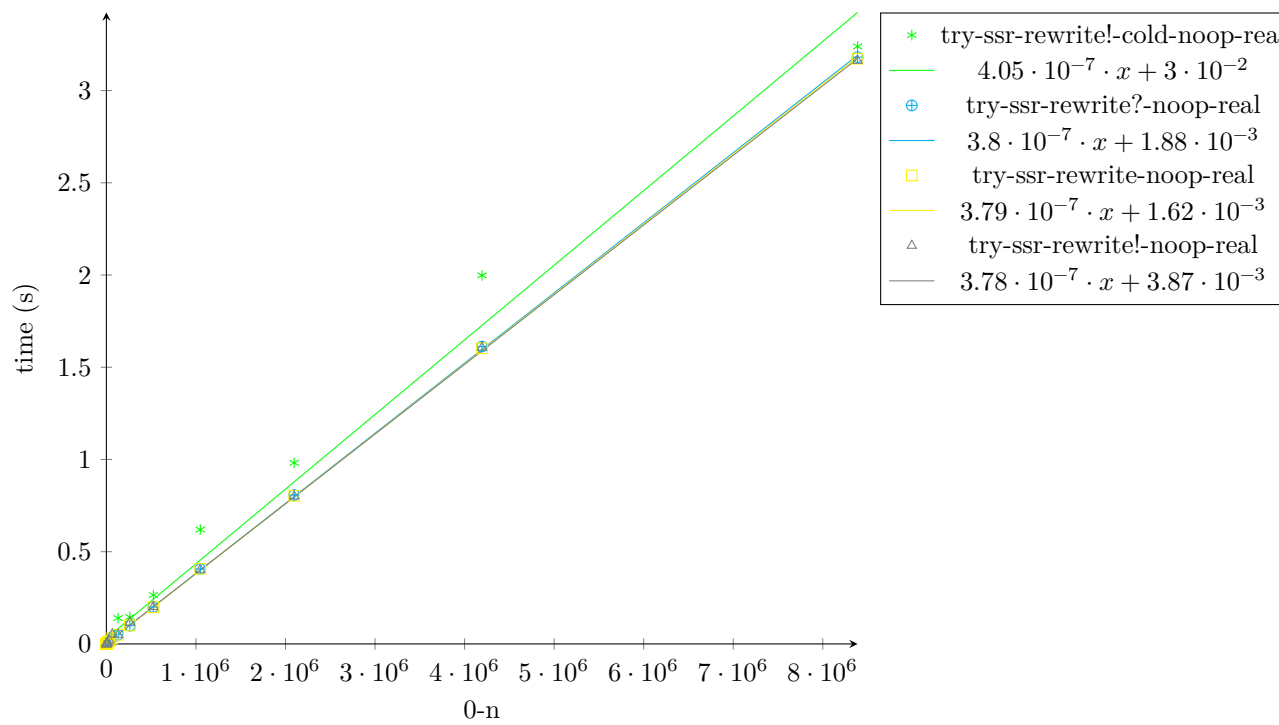
Figure 24: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn   1
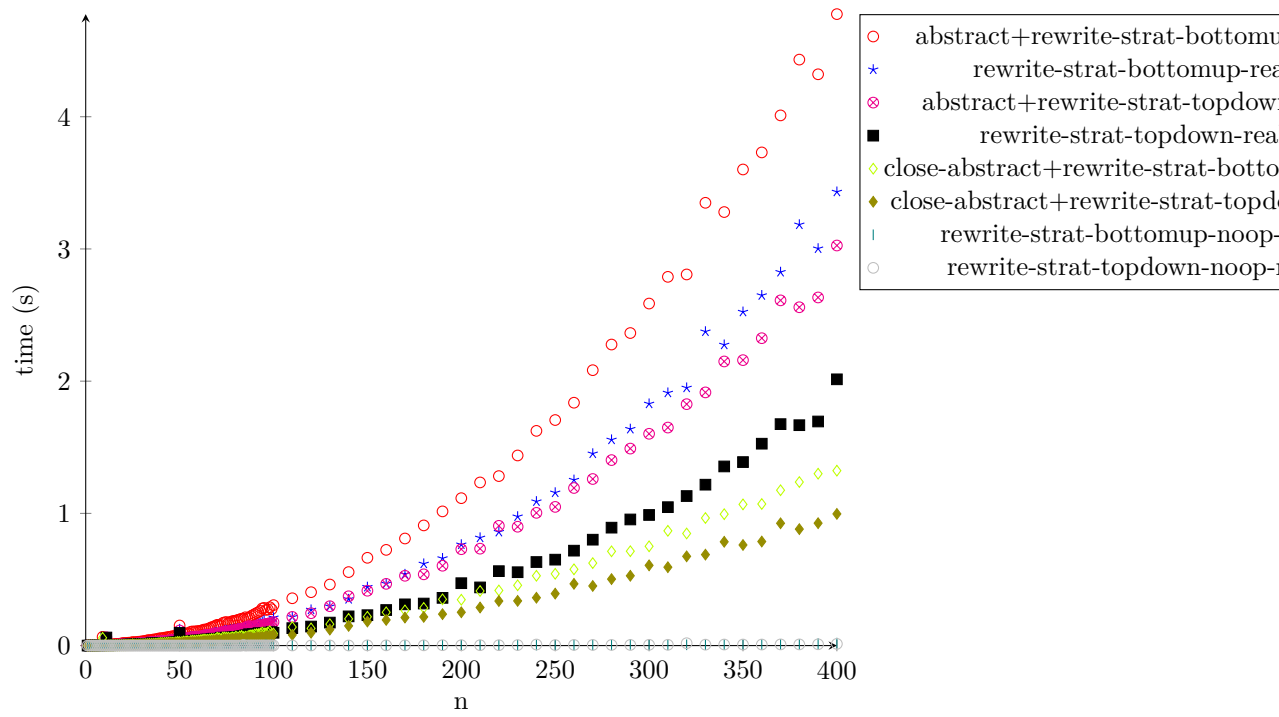
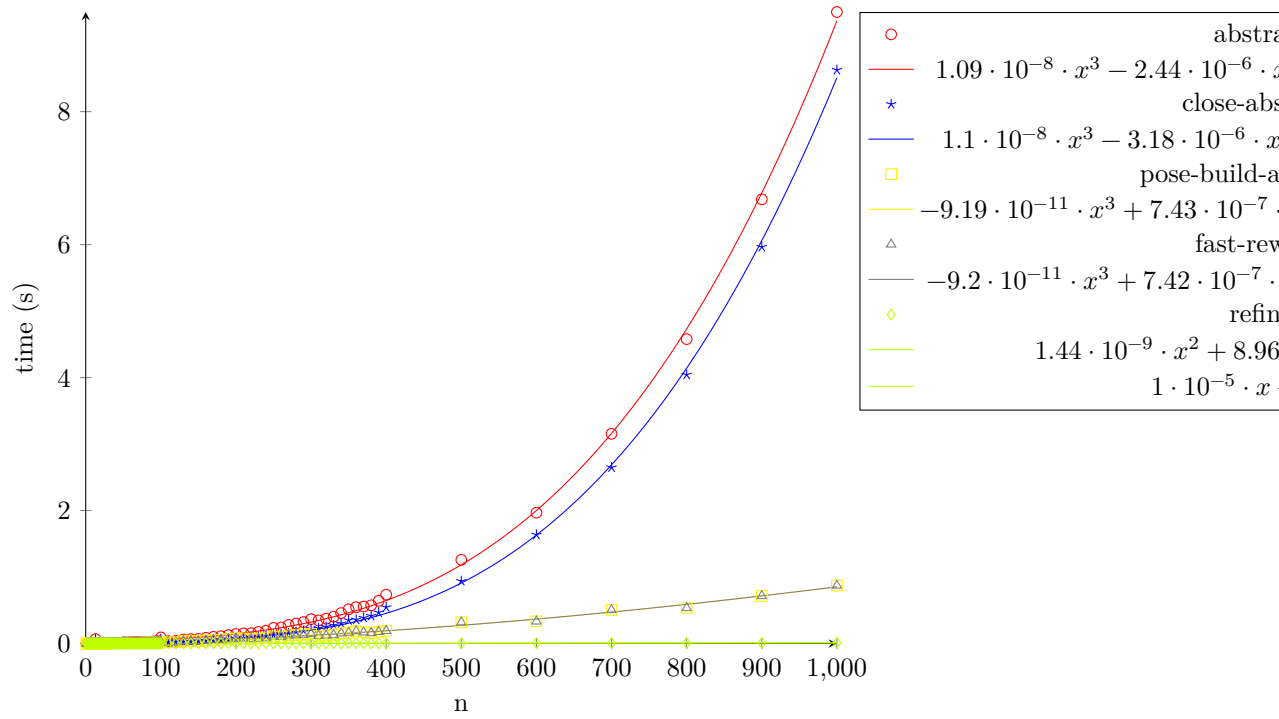Figure 25: timing-rewrite-repeated-app-rewrite-strat

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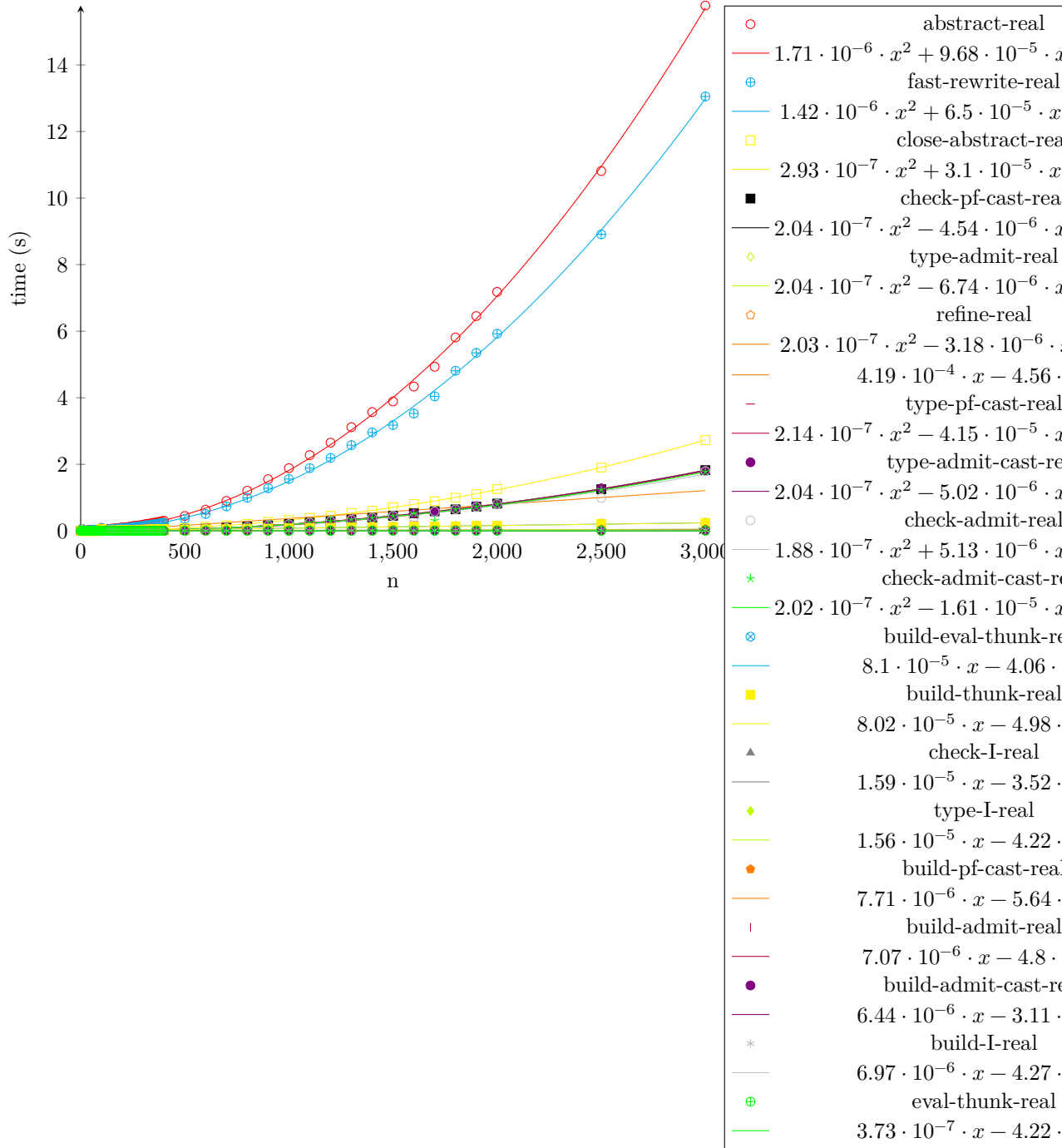Figure 26: timing-rewrite-repeated-app-fast-rewrite

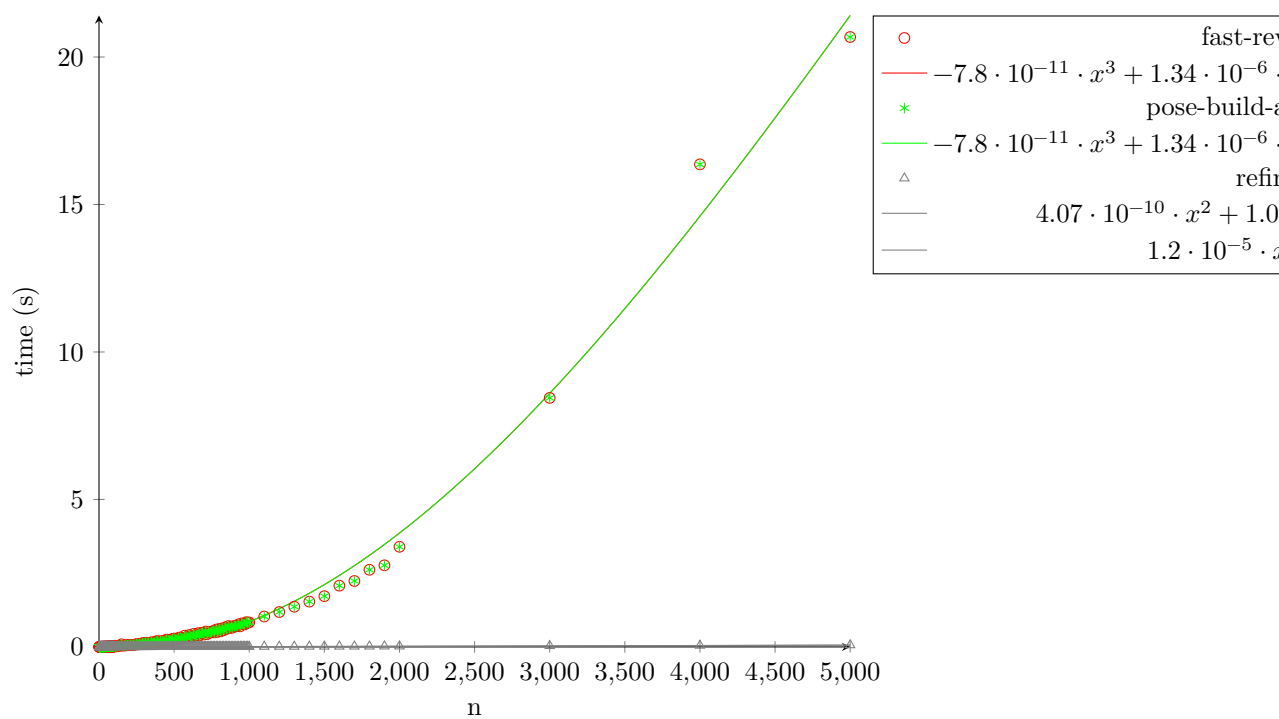Figure 27: timing-rewrite-repeated-app-fast-rewrite-ltac2

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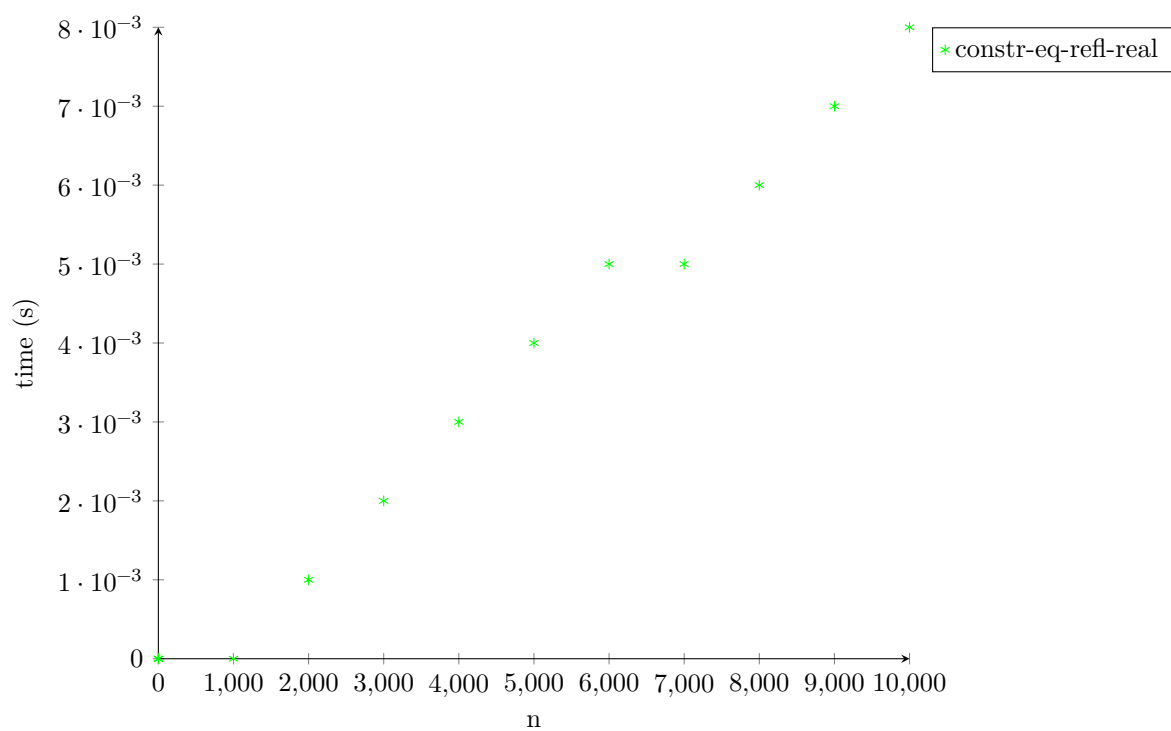Figure 28: timing-rewrite-repeated-app-fast-rewrite-no-abstract
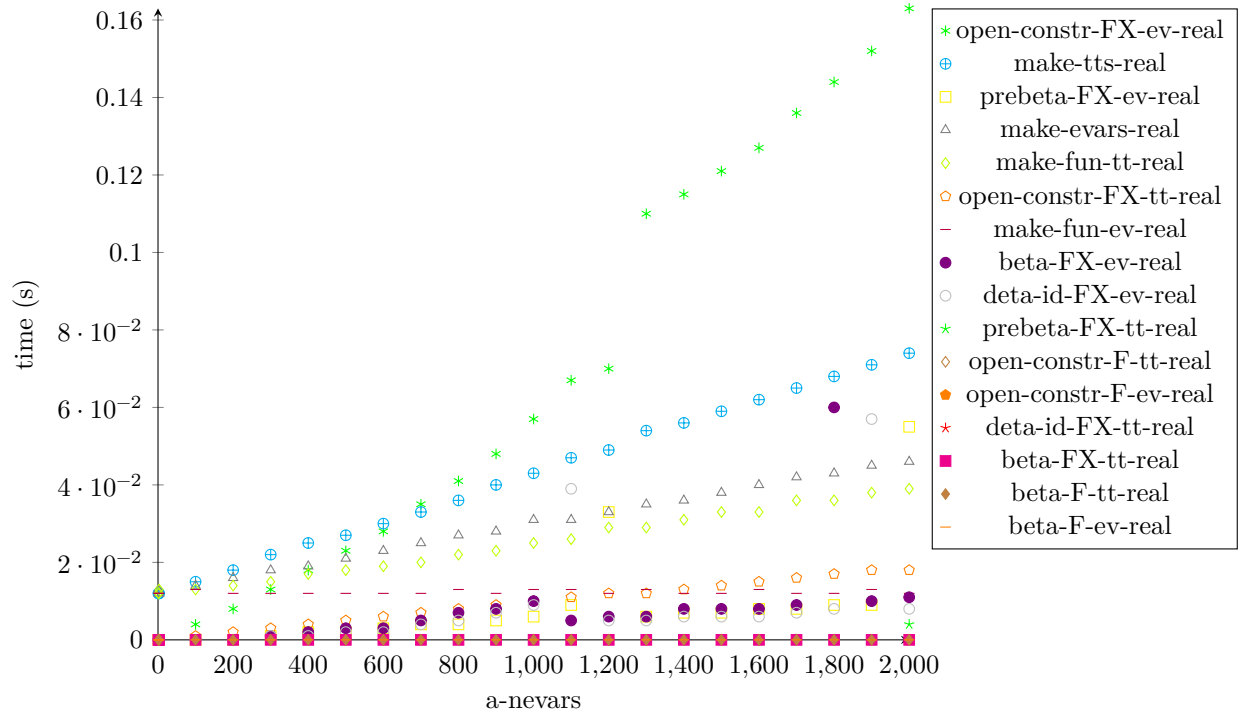
Figure 29: timing-constr-eq-alpha

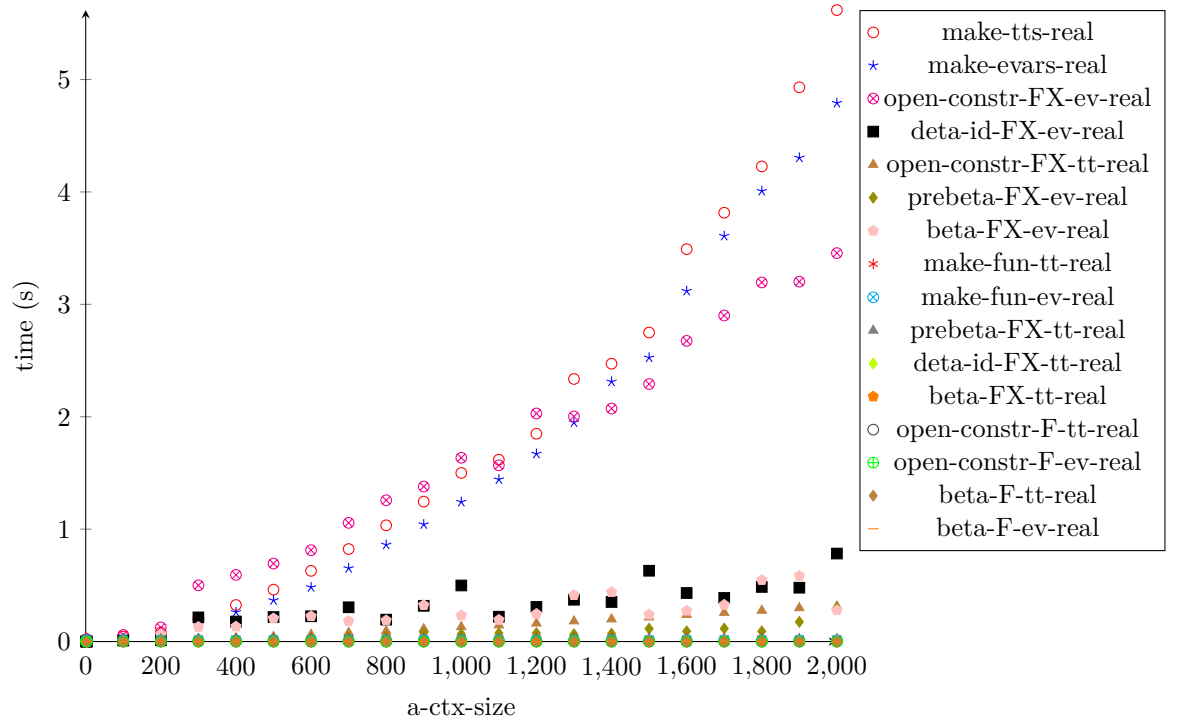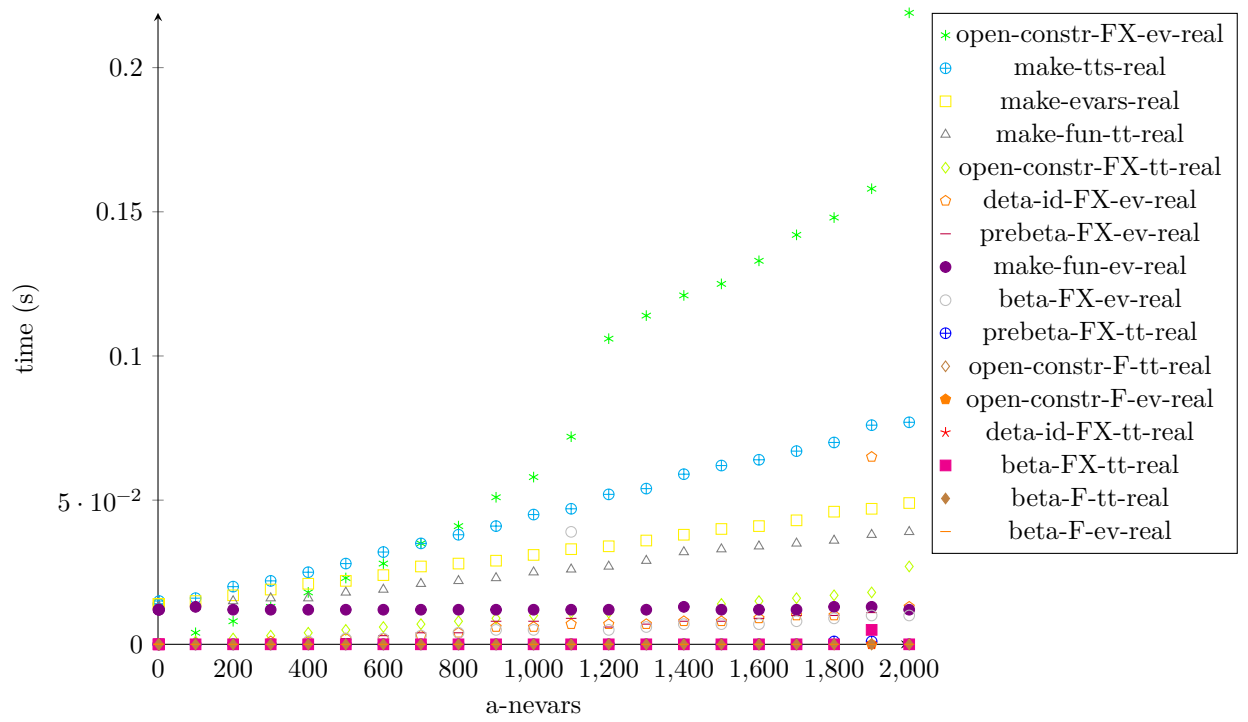Figure 30: timing-lift-identity-evar-subst-nevars param-ctx-size 0, 1, param-extra-binders 0, 1

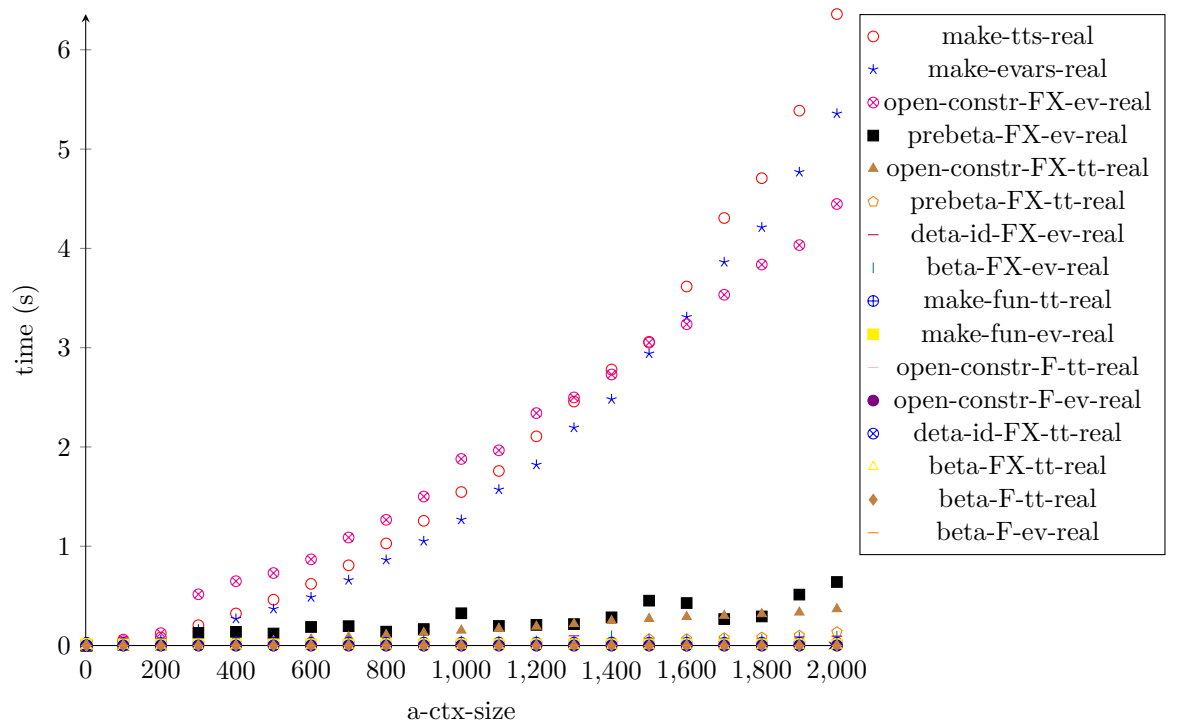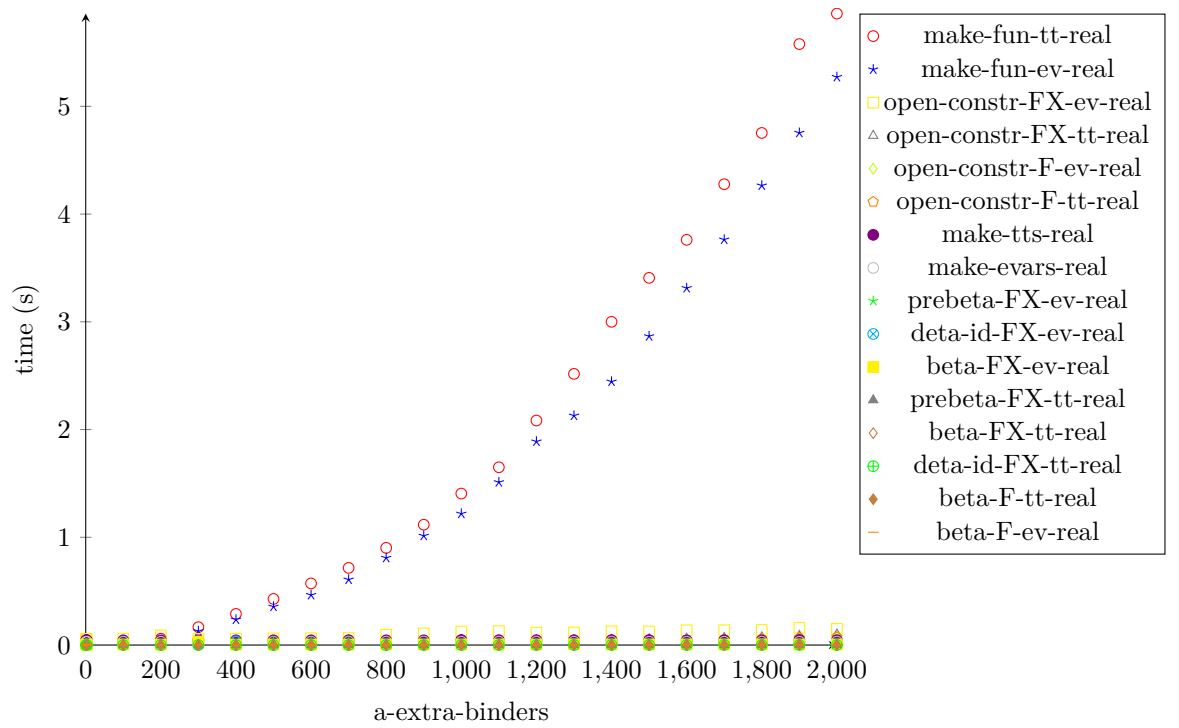Figure 31: timing-lift-identity-evar-subst-ctx param-extra-binders   0, 1, param-nevars   0, 1
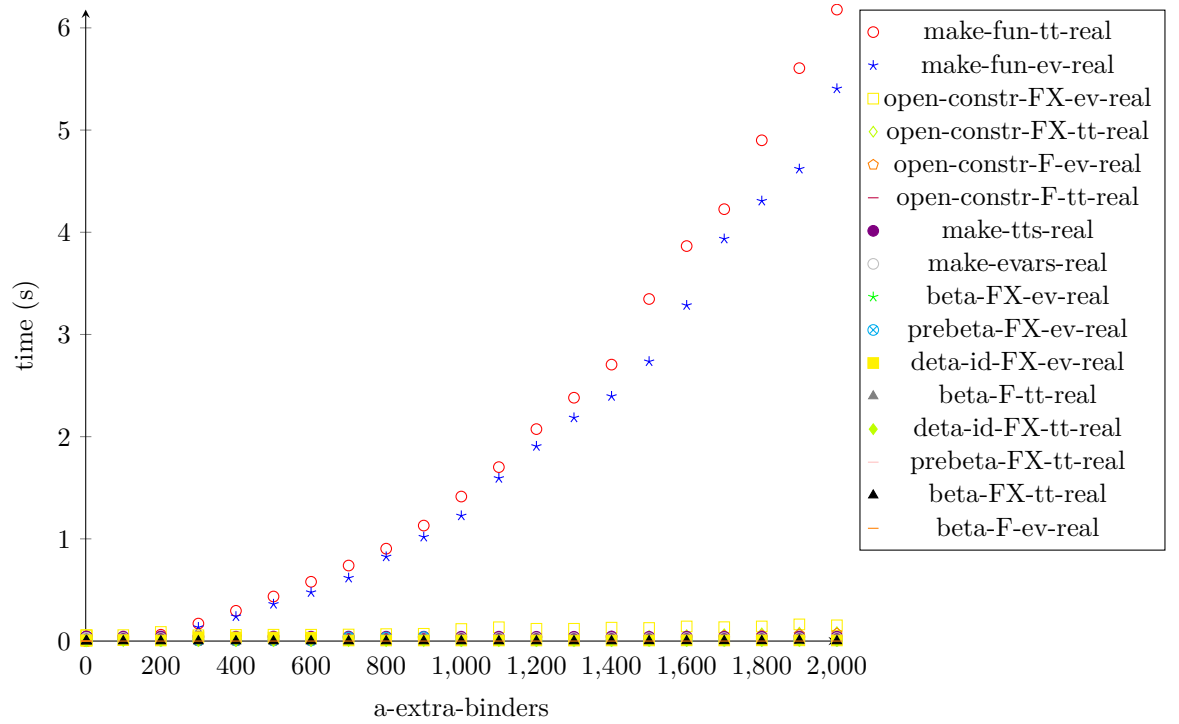
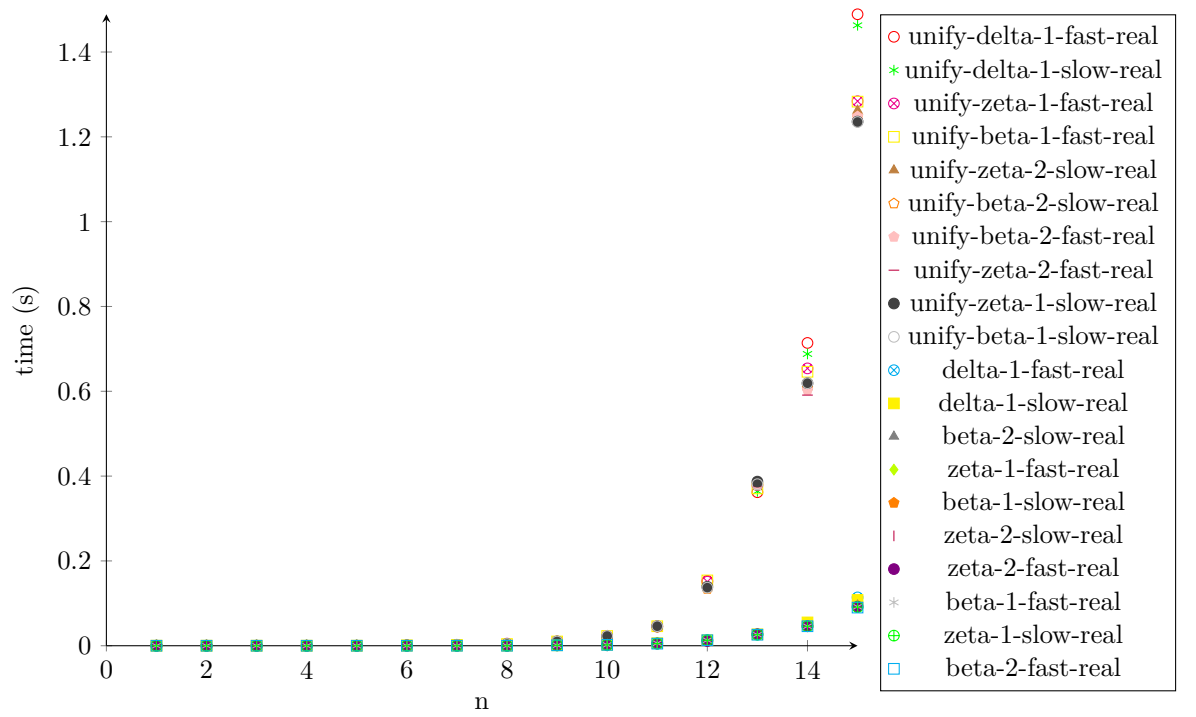Figure 32: timing-lift-identity-evar-subst-binders param-ctx-size　0, 1, param-nevars　0, 1

Figure 33: timing-lift-non-identity-evar-subst-nevars param-ctx-size 0, 1, param-extra-binders 0, 1

Figure 34: timing-lift-non-identity-evar-subst-ctx param-extra-binders   0, 1, param-nevars   0, 1

Figure 35: timing-lift-non-identity-evar-subst-binders param-ctx-size   0, 1, param-nevars   0, 1
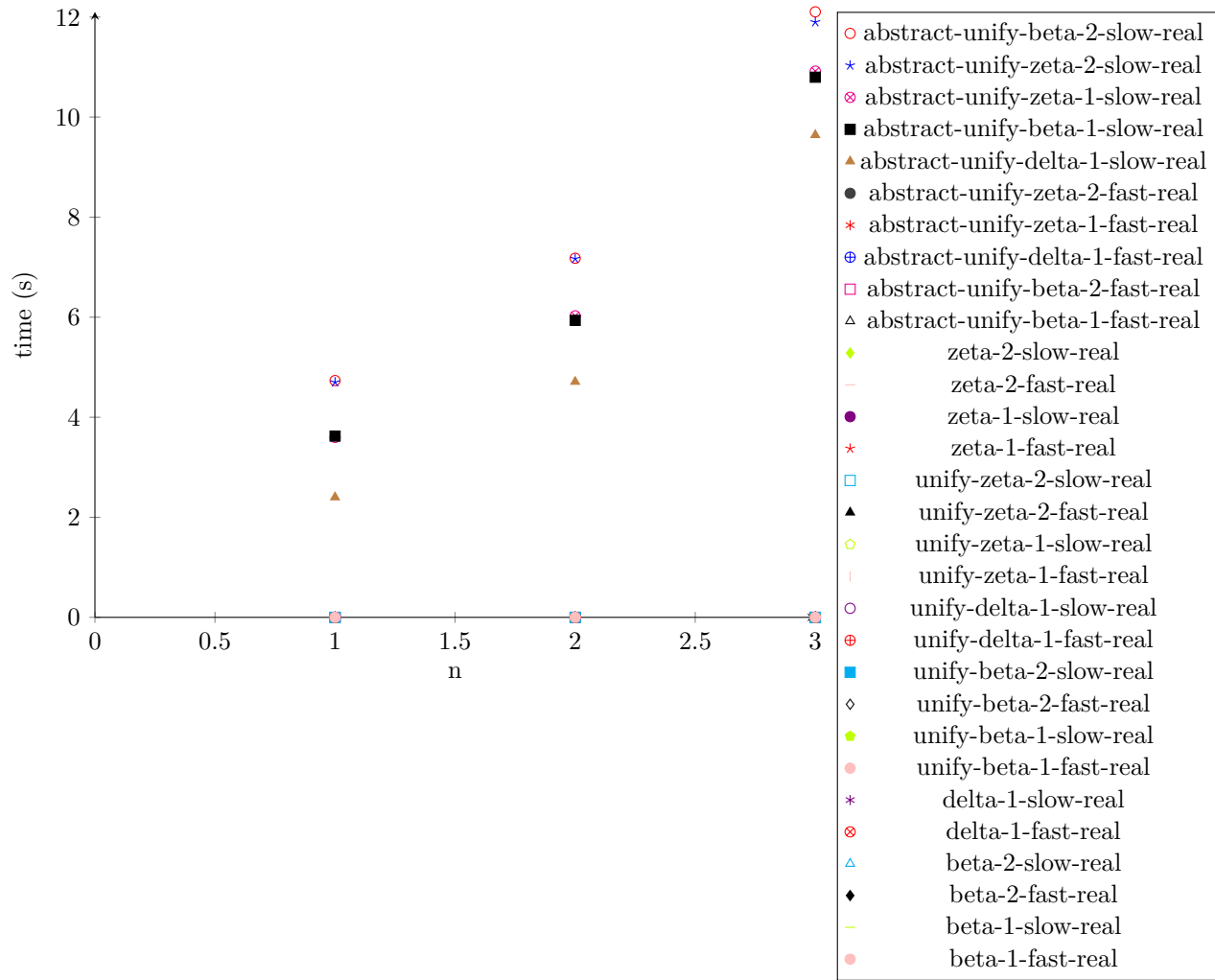
Figure 36: timing-one-step-reduction

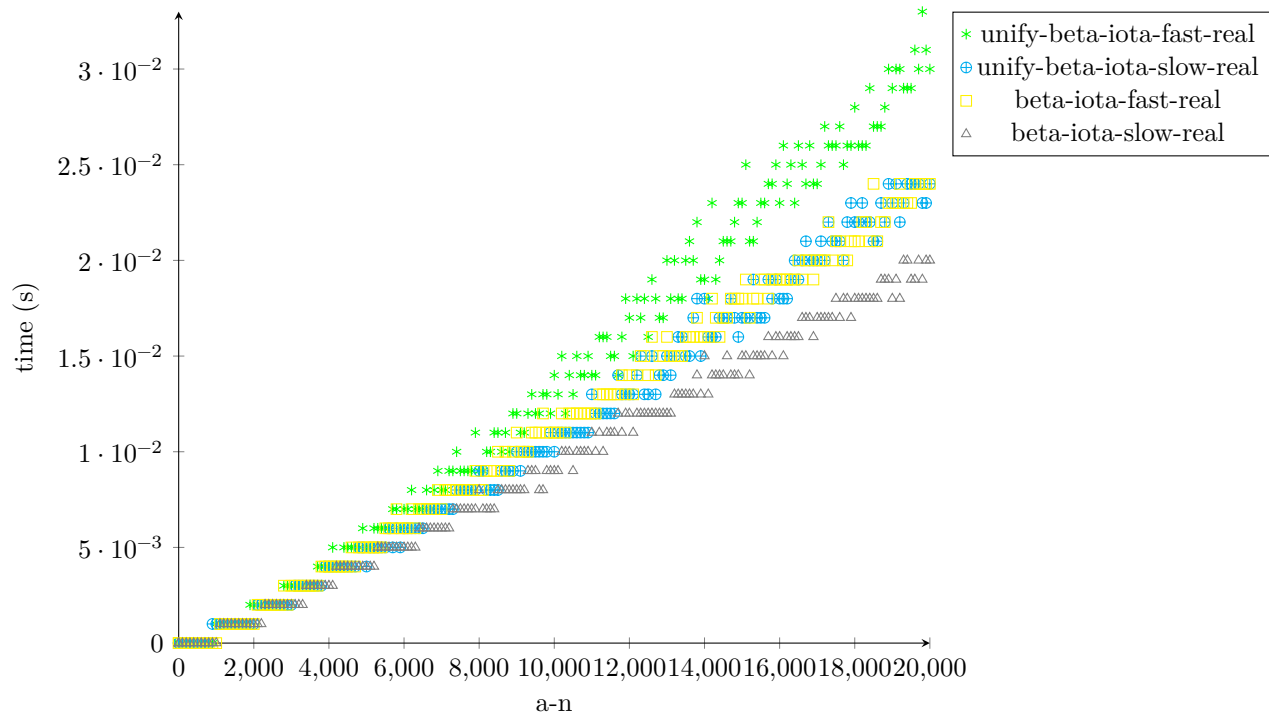Figure 37: timing-one-step-reduction-with-abstract

Figure 38: timing-iota-reduction-fact8 param-fact-n   8
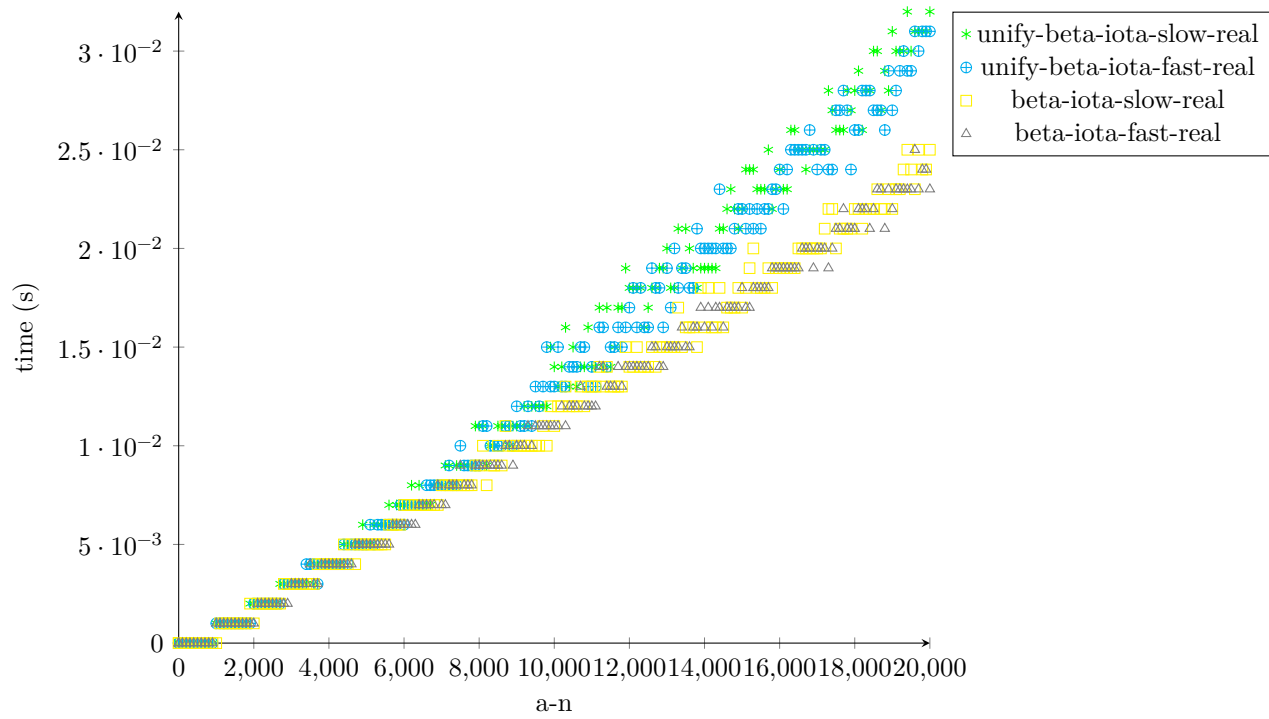
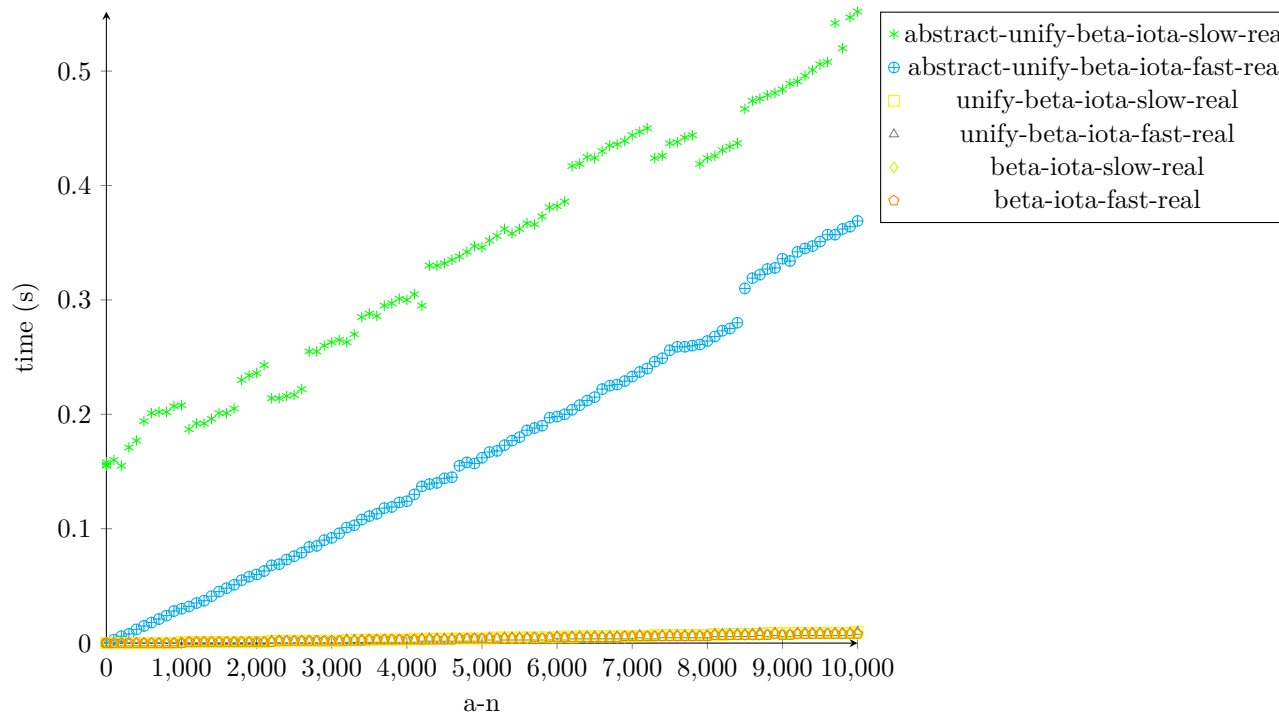Figure 39: timing-iota-reduction-fact9 param-fact-n   9

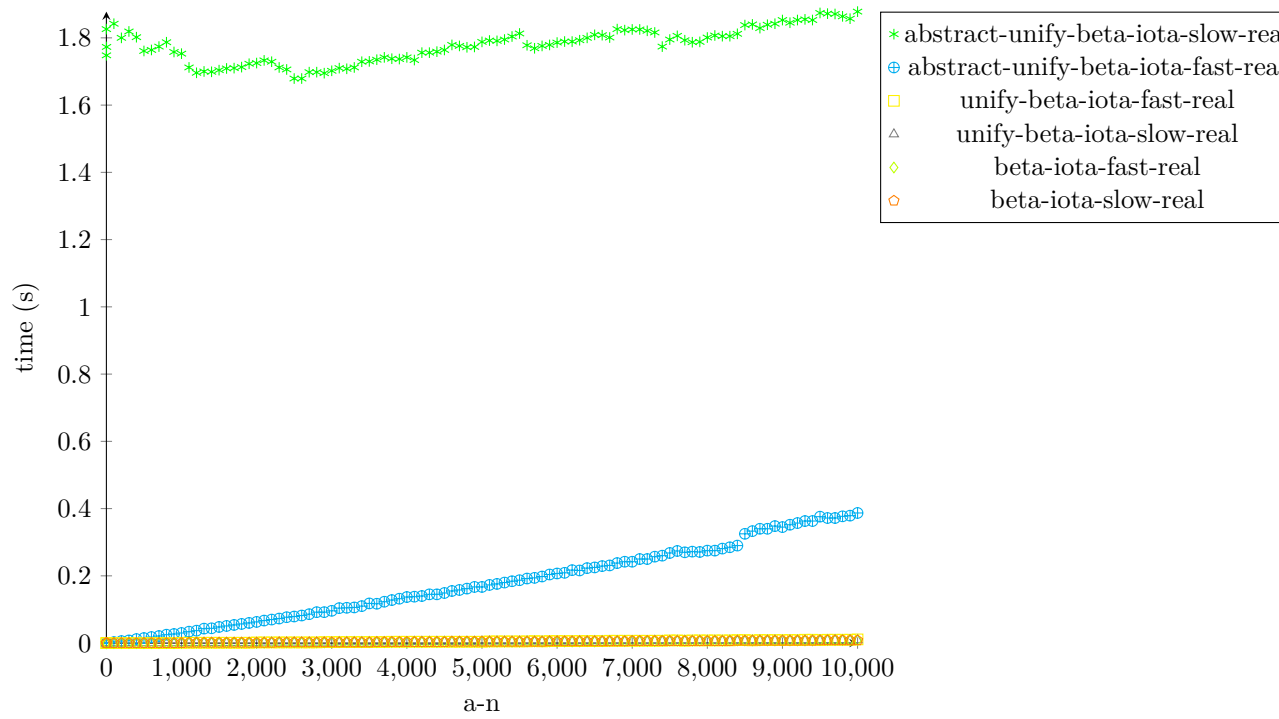Figure 40: timing-iota-reduction-with-abstract-fact8 param-fact-n   8

Figure 41: timing-iota-reduction-with-abstract-fact9 param-fact-n   9
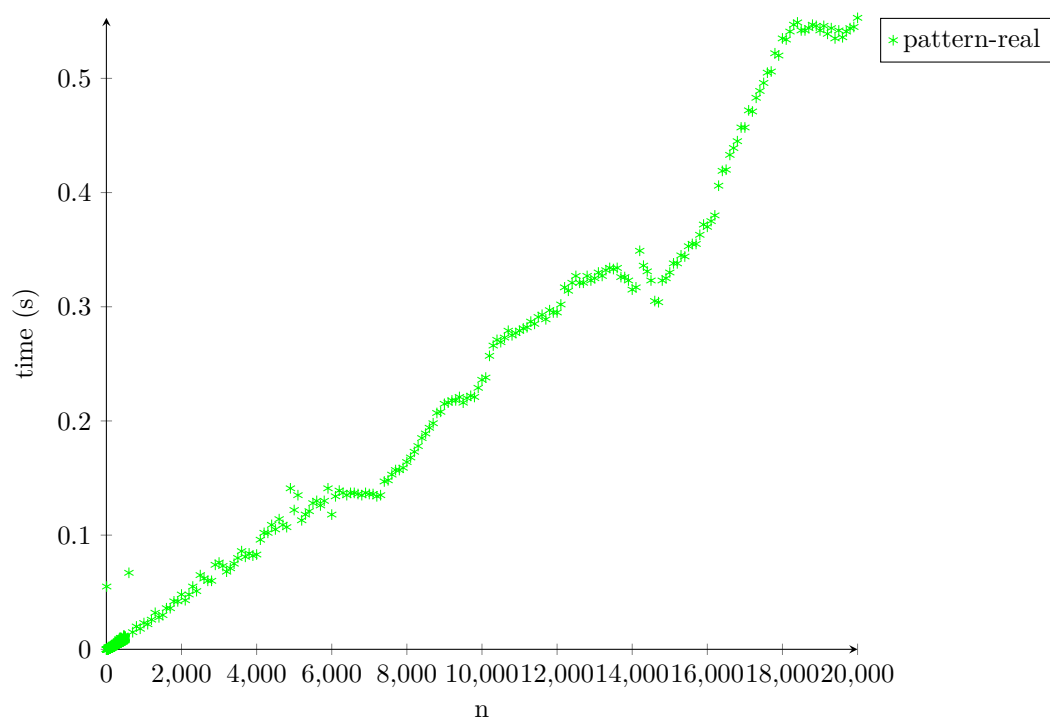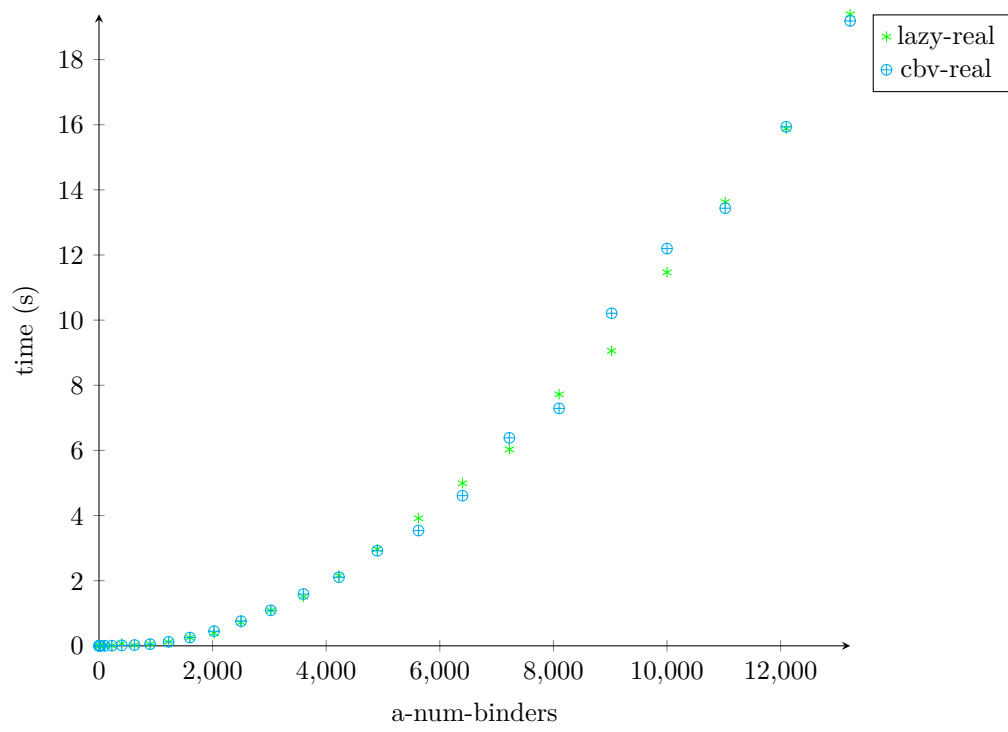
Figure 42: timing-pattern

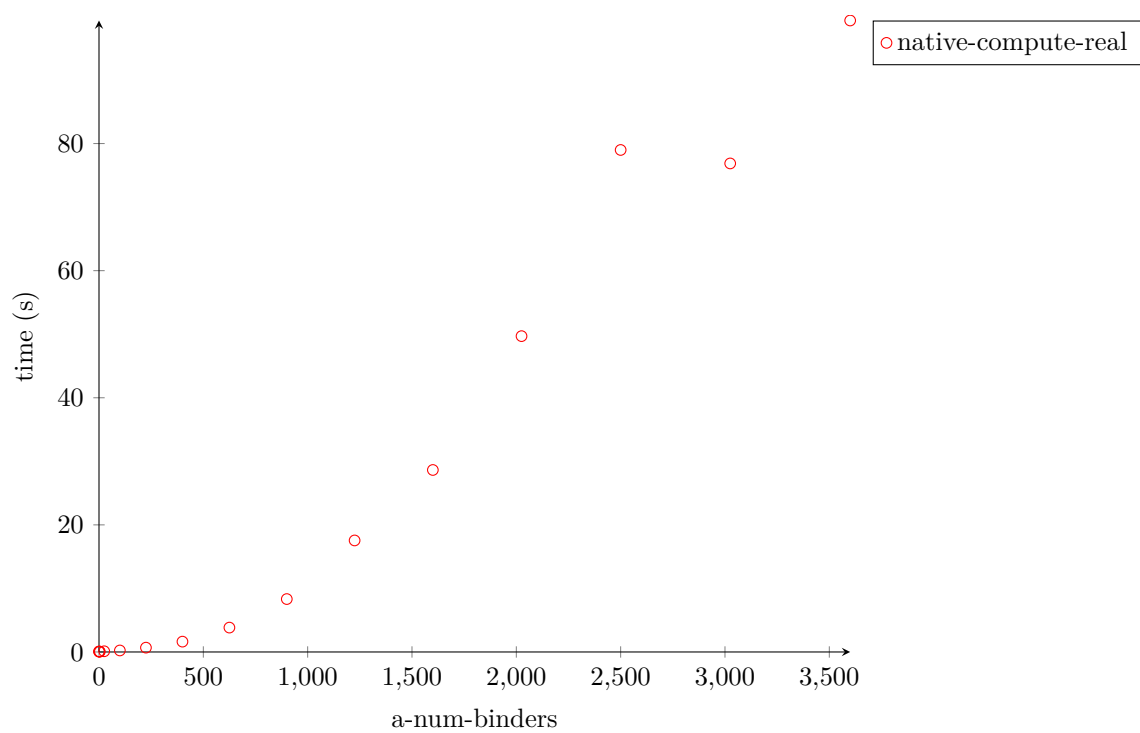Figure 43: timing-quadratic-cbv-lazy-PHOAS param-n   0
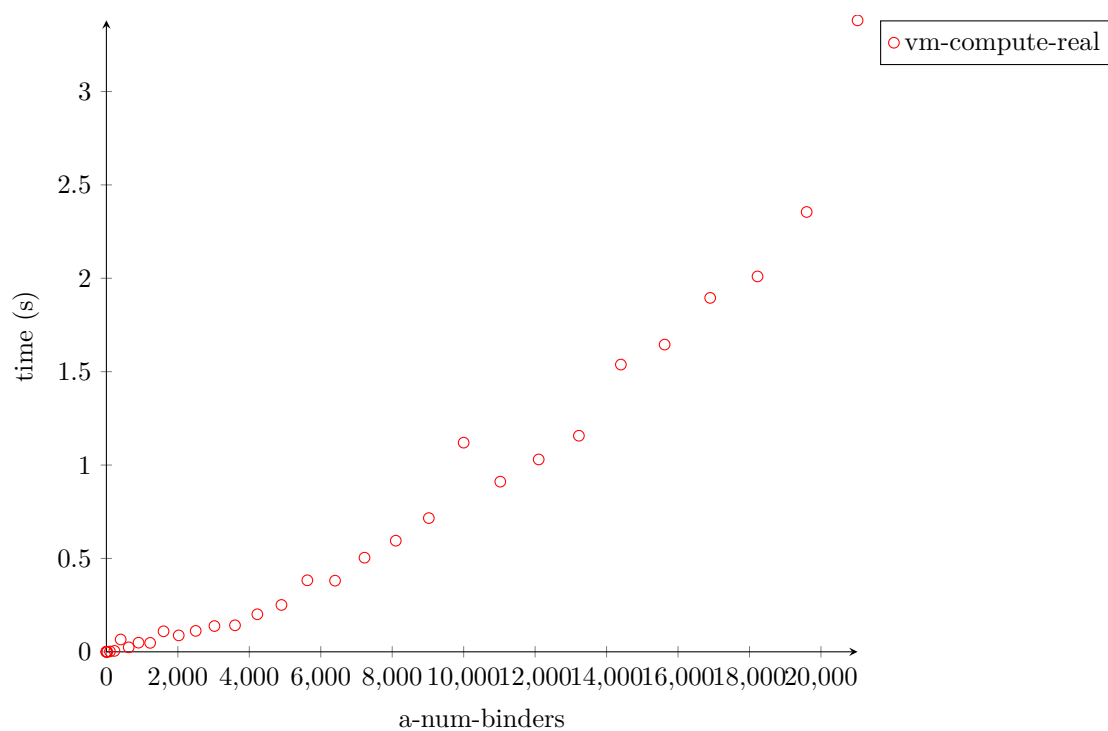
Figure 44: timing-quadratic-native-PHOAS param-n 0

Figure 45: timing-quadratic-vm-PHOAS param-n   0