

Figure 1: timing-pattern

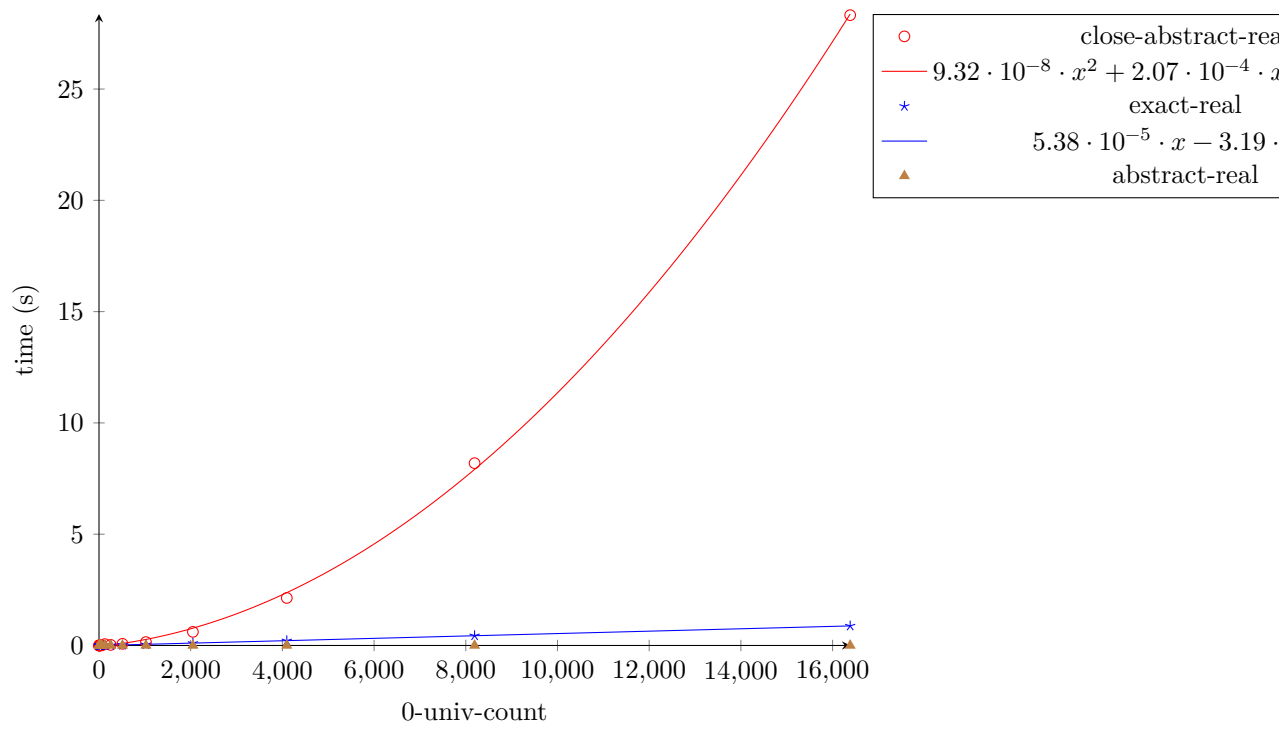


Figure 2: timing-n-polymorphic-universes param-1-n 0

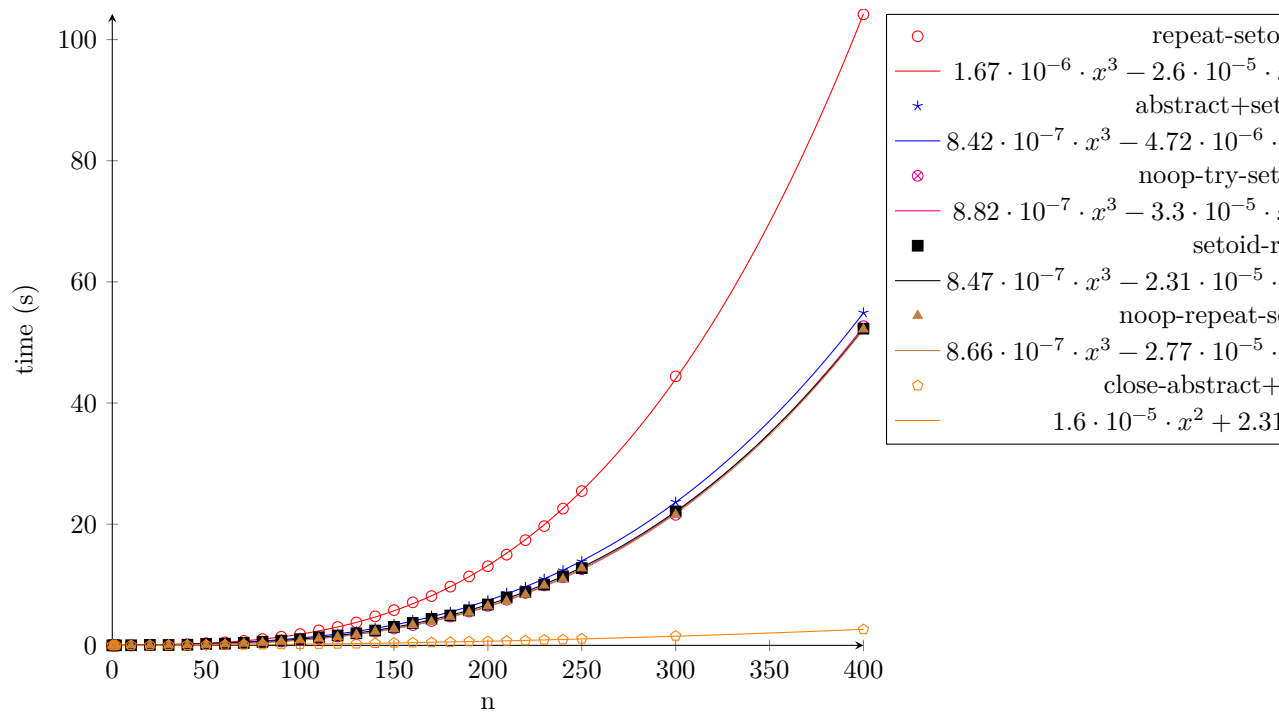


Figure 3: timing-repeat-setoid-rewrite-under-binders

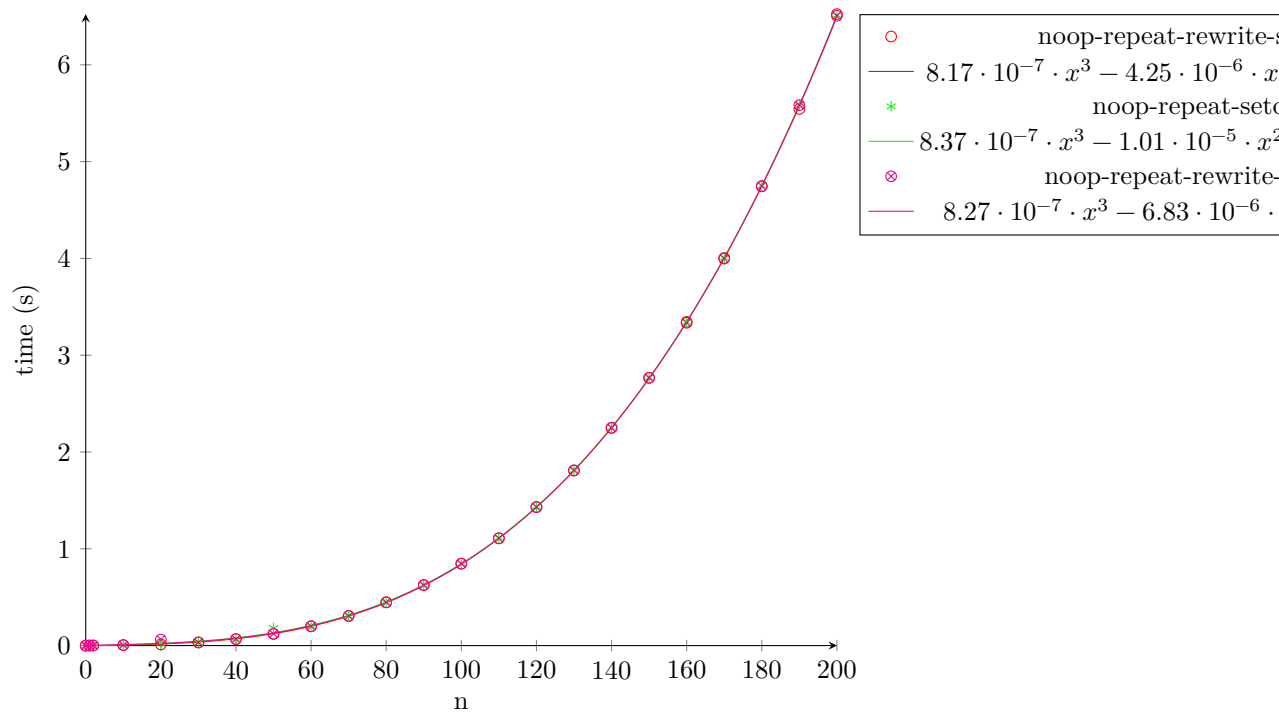


Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

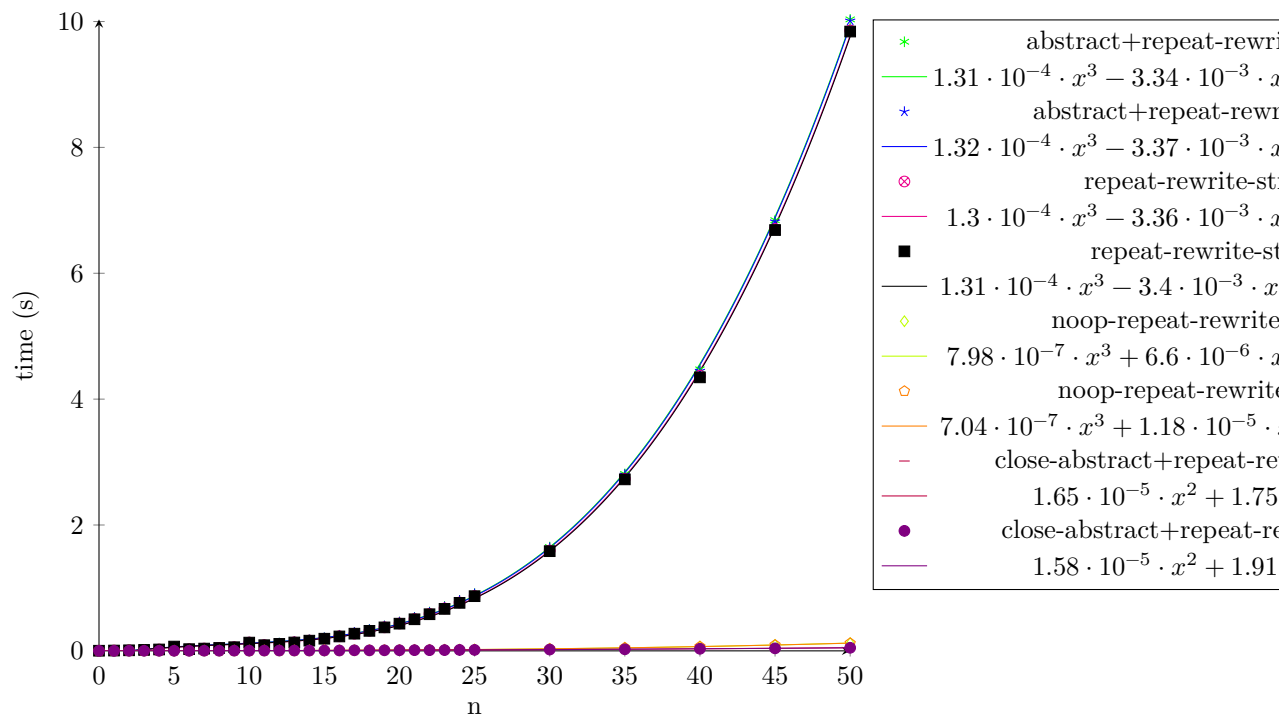


Figure 5: timing-rewrite-strat-under-binders

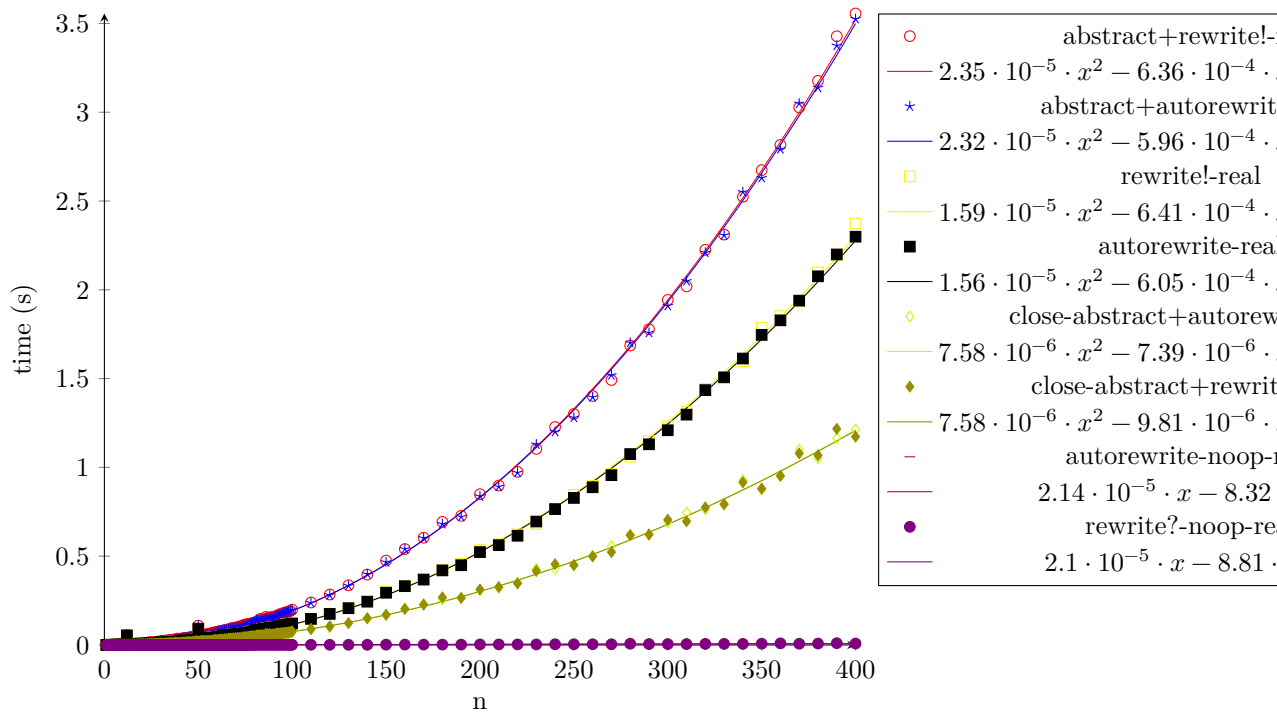


Figure 6: timing-rewrite-repeated-app-autorewrite

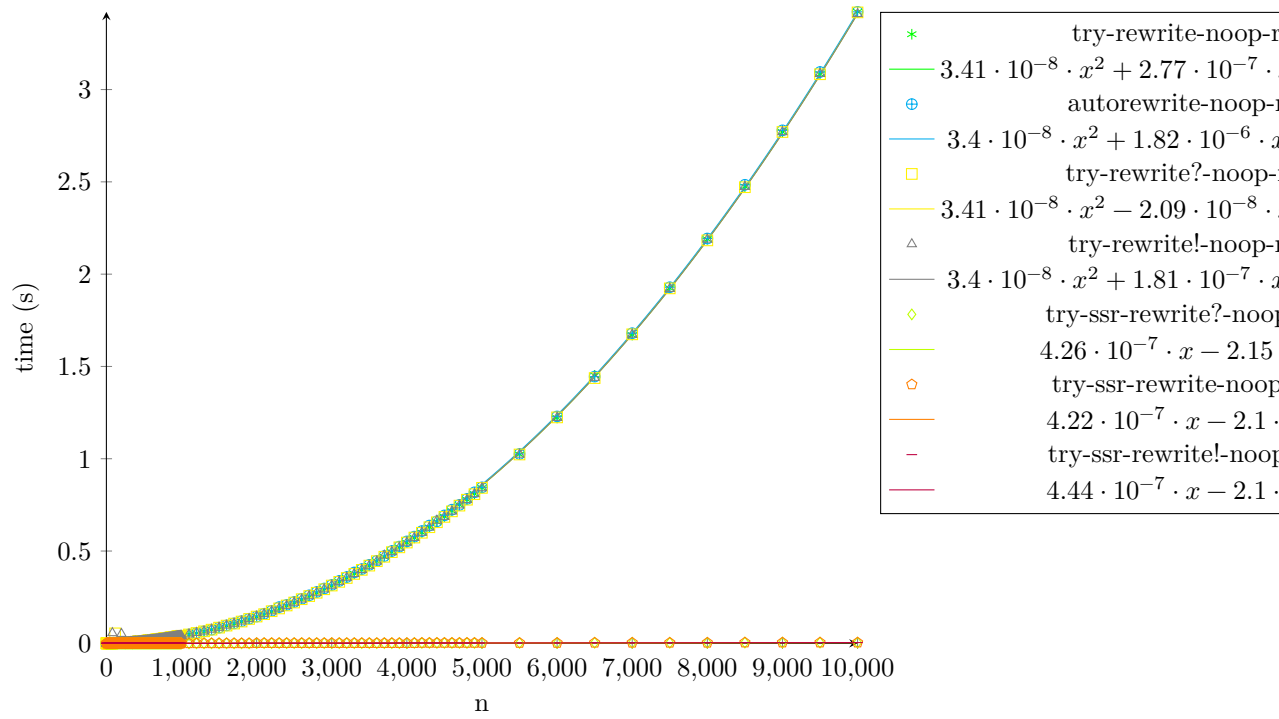


Figure 7: timing-rewrite-repeated-app-autorewrite-noop

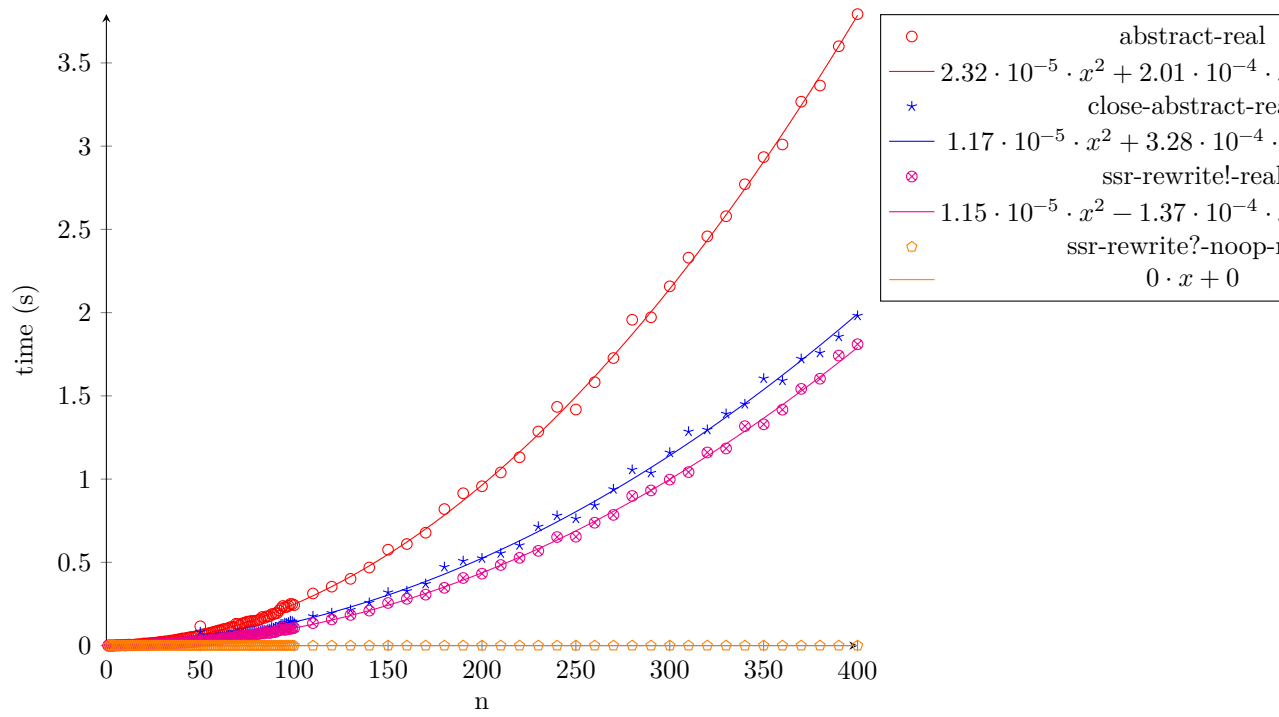


Figure 8: timing-rewrite-repeated-app-ssrrewrite

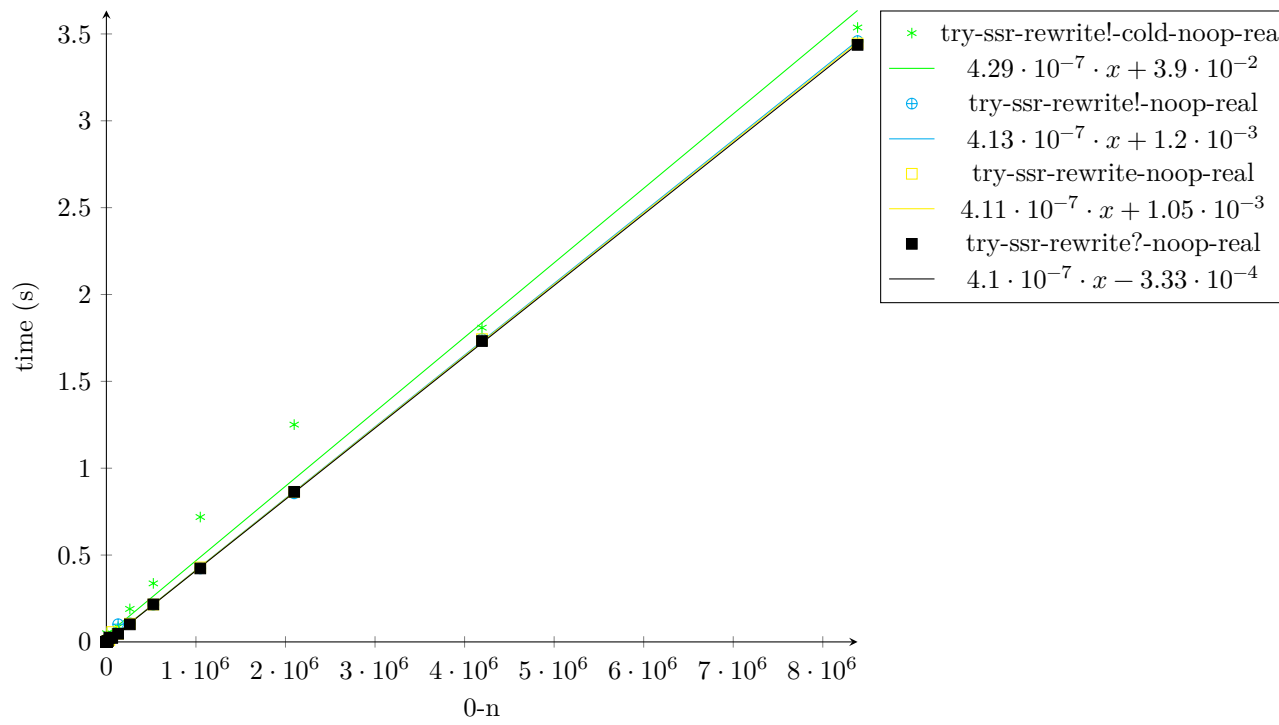


Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn 1

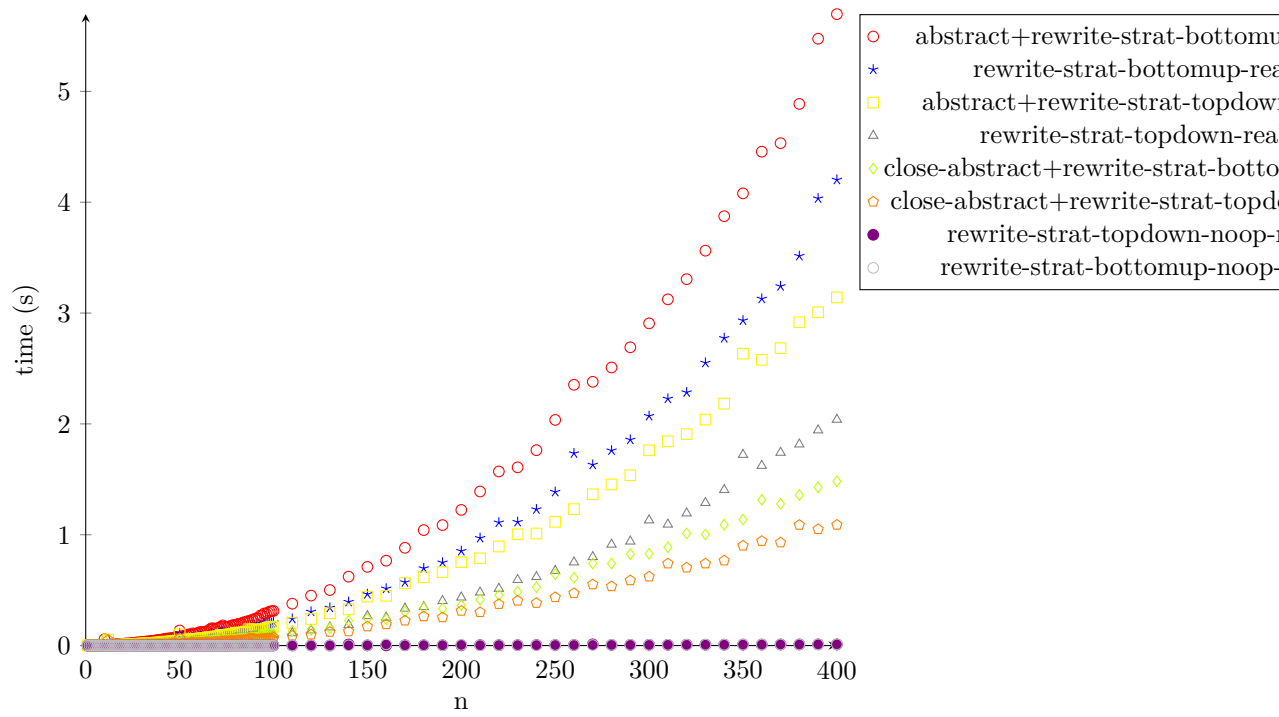


Figure 10: timing-rewrite-repeated-app-rewrite-strat

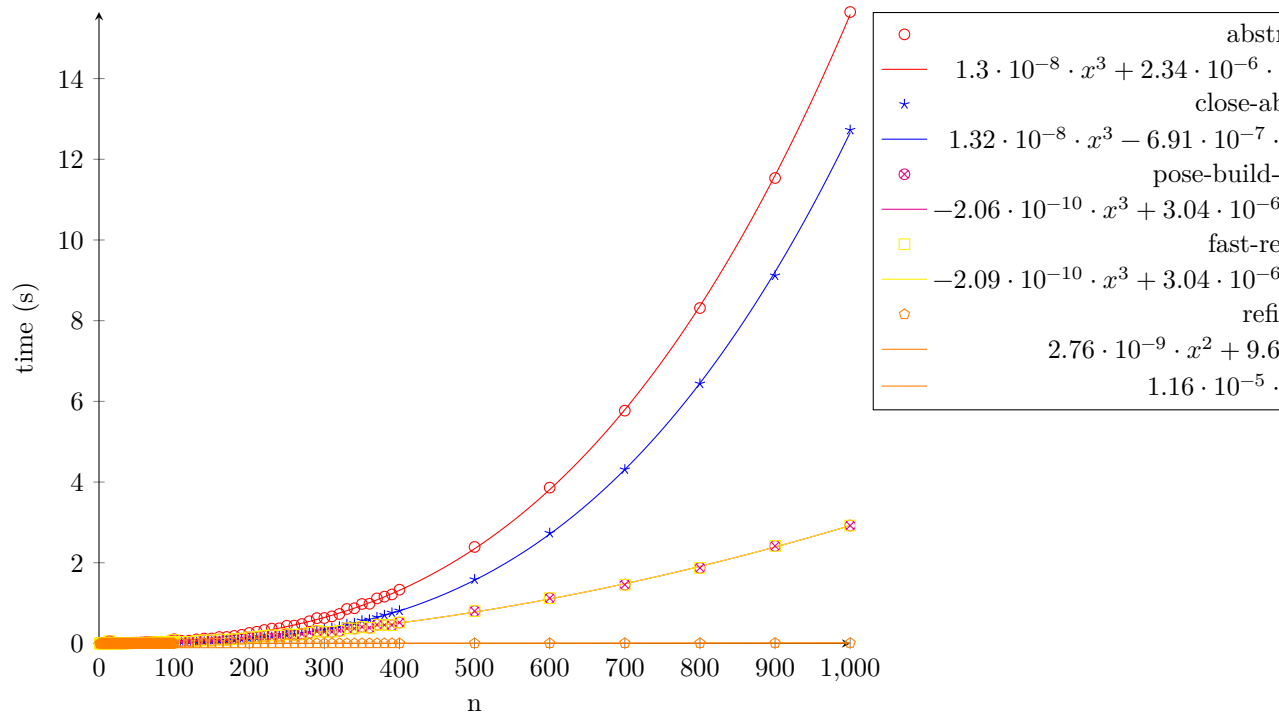


Figure 11: timing-rewrite-repeated-app-fast-rewrite

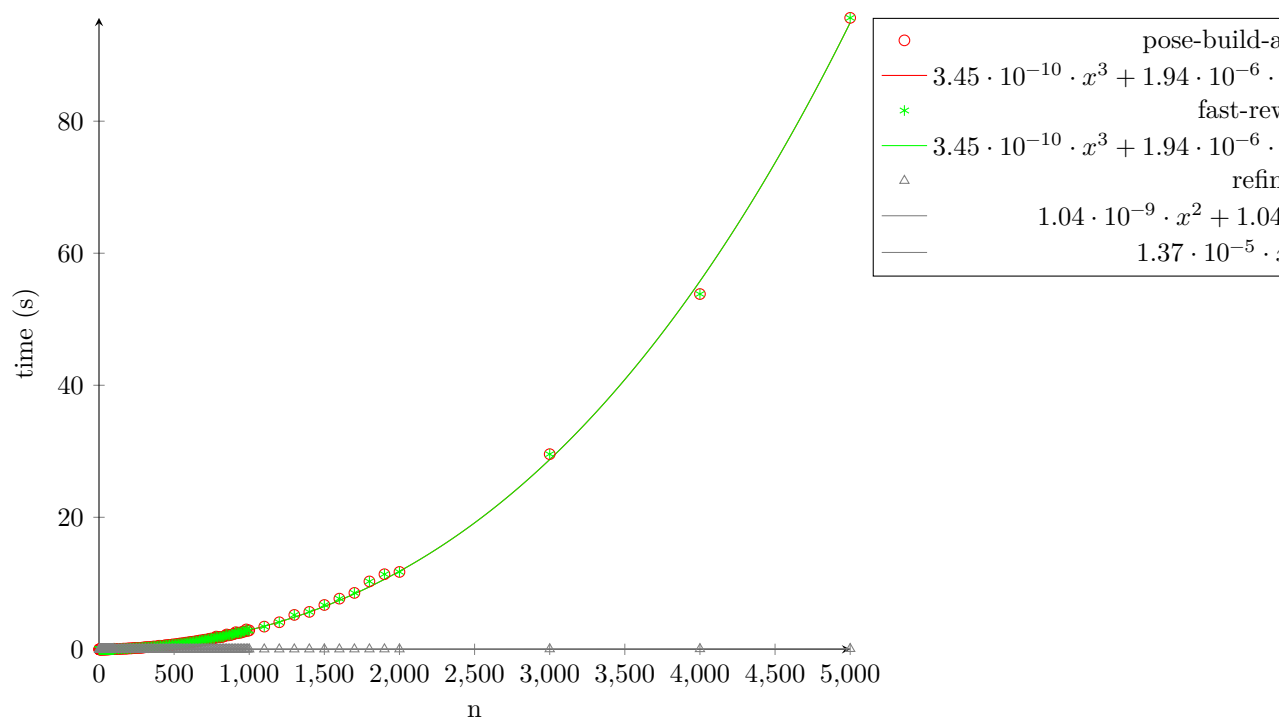
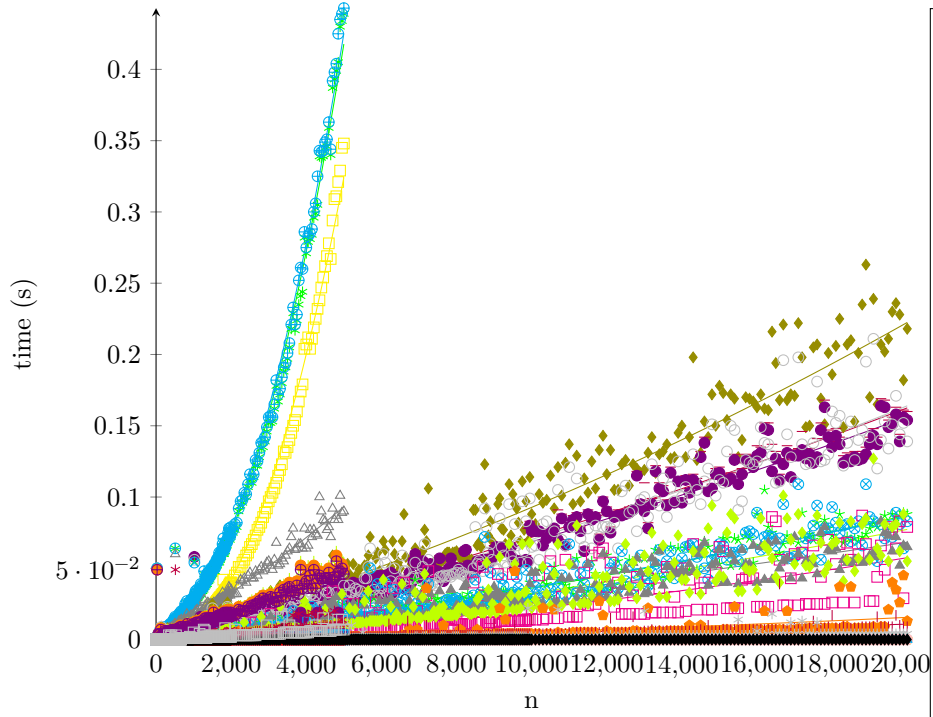


Figure 12: timing-rewrite-repeated-app-fast-rewrite-no-abstract



| | |
|---------------------------------|---------------------------------|
| * | norm-reif-for-be |
| $1.56 \cdot 10^{-8} \cdot x^2$ | |
| \oplus | reif-for-beta |
| $1.56 \cdot 10^{-8} \cdot x^2$ | |
| \square | eval-lazy-for-be |
| $1.49 \cdot 10^{-8} \cdot x^2$ | |
| \triangle | actual-reif-for-be |
| $7.24 \cdot 10^{-10} \cdot x^2$ | |
| \diamond | lazy-beta-iota-for-be |
| $1.56 \cdot 10^{-10} \cdot x^2$ | |
| \blacklozenge | reif-for-Param |
| $1.87 \cdot 10^{-10} \cdot x^2$ | |
| - | reif-for-Param |
| $9.48 \cdot 10^{-11} \cdot x^2$ | |
| \bullet | norm-reif-for-Param |
| $9.44 \cdot 10^{-11} \cdot x^2$ | |
| \circ | norm-reif-for-Pa |
| $1.18 \cdot 10^{-10} \cdot x^2$ | |
| * | actual-reif-for-Param |
| $7.53 \cdot 10^{-11} \cdot x^2$ | |
| \otimes | actual-reif-for-P |
| $6.3 \cdot 10^{-11} \cdot x^2$ | |
| \square | lazy-beta-iota-for- |
| $6.85 \cdot 10^{-11} \cdot x^2$ | |
| \blacktriangle | eval-lazy-for-Param |
| - | $1.98 \cdot 10^{-11} \cdot x^2$ |
| \blacklozenge | eval-lazy-for-Pa |
| $5.89 \cdot 10^{-11} \cdot x^2$ | |
| \blacklozenge | cbv-for-Param |
| $2.44 \cdot 10^{-11} \cdot x^2$ | |
| | cbv-for-Param |
| $7.21 \cdot 10^{-12} \cdot x^2$ | |
| \bullet | lazy-beta-iota-for- |
| $1.29 \cdot 10^{-10} \cdot x^2$ | |
| * | lazy-beta-iota-for-Pa |
| $1.9 \cdot 10^{-12} \cdot x^2$ | |
| \square | eval-lazy-for-beta |
| $8.91 \cdot 10^{-11} \cdot x^2$ | |
| \blacktriangle | transitivity-(Denote-rv)-I |
| $8.91 \cdot 10^{-11} \cdot x^2$ | |
| | transitivity-(Denote-rv)-I |
| $8.91 \cdot 10^{-11} \cdot x^2$ | |
| \blacksquare | transitivity-(Denote-rv)-I |
| $8.91 \cdot 10^{-11} \cdot x^2$ | |
| \blacklozenge | transitivity-(Denote-rv)-I |
| $8.91 \cdot 10^{-11} \cdot x^2$ | |
| \bullet | pre-for-beta-P |
| \otimes | $8.91 \cdot 10^{-11} \cdot x^2$ |
| \triangle | pre-for-beta |
| $8.91 \cdot 10^{-11} \cdot x^2$ | |

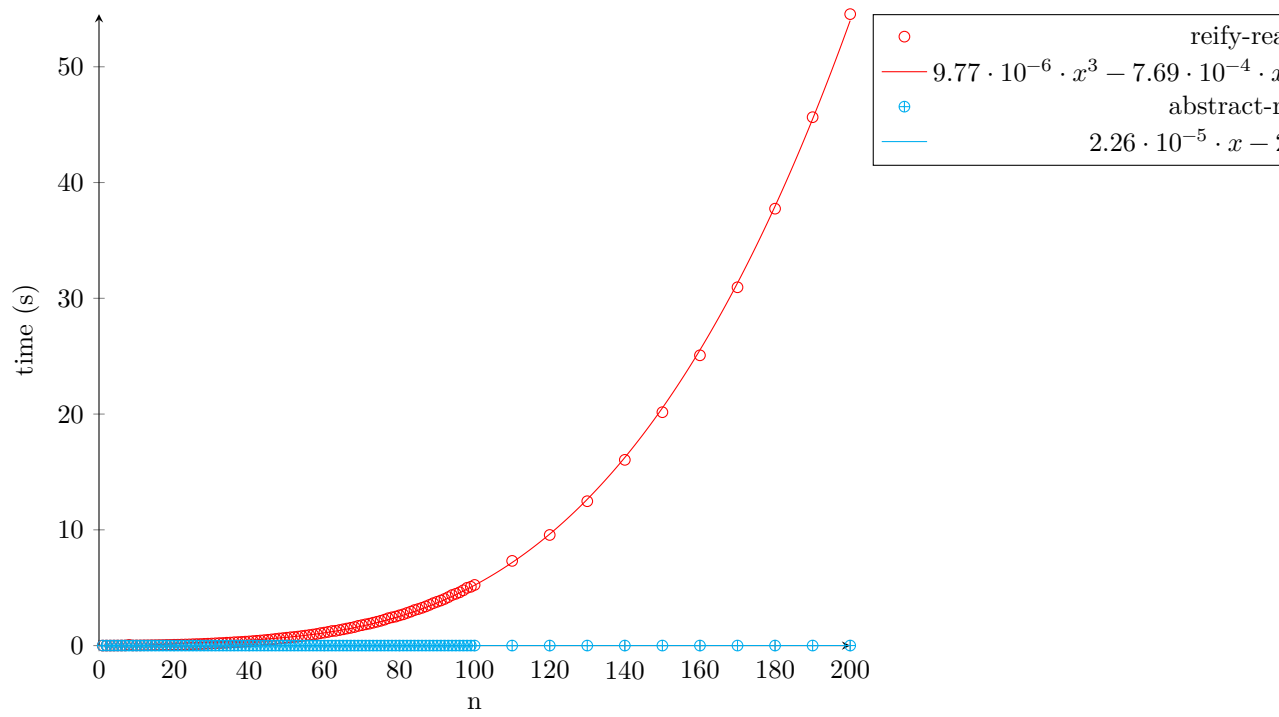


Figure 14: timing-typeclass-reification-let-in-HOAS

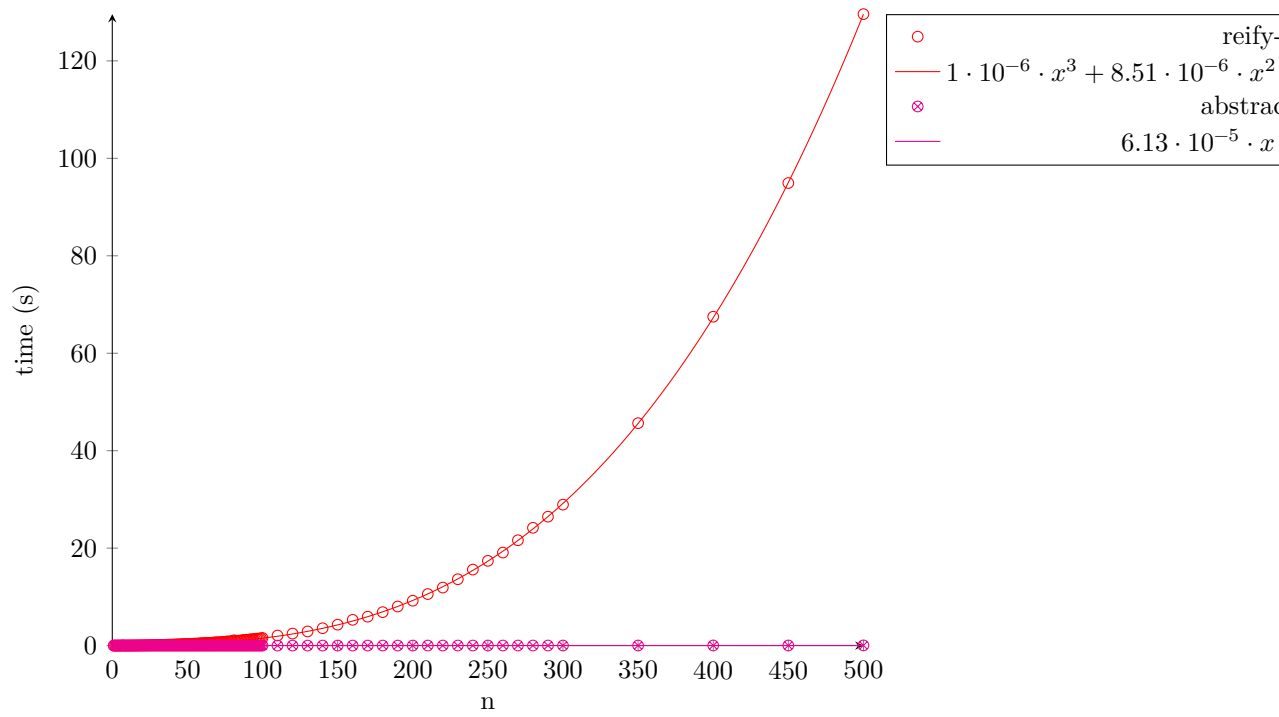


Figure 15: timing-typeclass-reification-let-in-PHOAS