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Adaptive Algorithmic Behavior for Solving Mixed Integer Programs Using Bandit Algorithms

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Abstract

State-of-the-art solvers for mixed integer programs (MIP) govern a variety of algorithmic components. Ideally, the solver adaptively learns to concentrate its computational budget on those components that perform well on a particular problem, especially if they are time consuming. We focus on three such algorithms, namely the classes of large neighborhood search and diving heuristics as well as Simplex pricing strategies. For each class we propose a selection strategy that is updated based on the observed runtime behavior, aiming to ultimately select only the best algorithms for a given instance. We review several common strategies for such a selection scenario under uncertainty, also known as Multi Armed Bandit Problem. In order to apply those bandit strategies, we carefully design reward functions to rank and compare each individual heuristic or pricing algorithm within its respective class. Finally, we discuss the computational benefits of using the proposed adaptive selection within the SCIP Optimization Suite on publicly available MIP instances.

1 Introduction

Most modern MIP solvers employ the LP-based branch-and-bound method. At each node of the search tree, a relaxation of the problem is solved by the dual Simplex algorithm to obtain both improving solutions and lower bounds on the problem. Many primal heuristics have been proposed (see [4] for an overview and further references) to aid the branch-and-bound procedure in finding good feasible solutions quickly. Two important subclasses of primal heuristics for MIP are large neighborhood search (LNS) and diving heuristics (Sec. 3.2 and 3.3). In total, SCIP [8] in version 5.0 features 12 diving heuristics, 10 pure LNS heuristics, further LNS heuristics for MINLP as well as certain primal heuristics that solve auxiliary problems in special cases. As there is no theoretical reason why certain heuristics work better for a MIP instance, tuning them individually can be a tedious task. Similarly, a large amount of the total solving time is spent during LP re-optimizations, so the choice of an efficient pricing method can be crucial (Sec. 3.1).

In all three cases, it is desirable to "learn" the best performing algorithms during the solving process. To this end, we investigate computational benefits of adaptive algorithmic behavior, governed by algorithms for the multi-armed bandit problem (Sec. 2). Such bandit algorithms try to balance their selection carefully between exploration among the available set of algorithms and exploitation of the best performing ones. We discuss suitable reward functions to measure the success of an algorithm for each class, and present promising results in a computational study.

2 Bandit Selection Strategies

The selection among a set of actions under uncertain payoffs appears as *multi-armed bandit problem* (MAB)[5]. In each *round* $t > 0$, a player selects an *action* a_t out of a set of actions $\mathcal{A}$. In turn for playing a_t, the player observes a *reward* $r_{a_t,t} \in [0, 1]$ with the goal to maximize the *total reward* $\sum_t r_{a_t,t}$. We call algorithms for MAB *selection strategies*. MAB distinguishes two scenarios. In the *stochastic scenario*, rewards are drawn from a reward distribution R_a that is independent of t. As the expected rewards are not known to the player beforehand, a good selection strategy carefully balances exploration between the actions and exploitation of the best single action. A common strategy to address stochastic scenarios is based on *upper confidence bounds* (`UCB`). Let $T_{a,t}$ denote the number of times that action $a \in \mathcal{A}$ has been selected until round t, and let $\bar{r}_{a,t}$ denote the mean reward of action a after a has been selected once ($T_{a,t} > 0$). After playing every action once, `UCB` selects the action that maximizes an upper confidence bound

$$a_t := \operatorname*{argmax}_{a \in \mathcal{A}} \left\{ \bar{r}_{a,t-1} + \sqrt{\alpha \cdot \frac{\ln(1+t)}{T_{a,t-1}}} \right\}$$

on the expected reward. The confidence band around a mean reward increases with every round in which an action is not played, forcing the selection of inferior actions from time to time. Its width is controlled by a parameter $\alpha \geq 0$. Note that a `UCB` strategy acts entirely greedy for $\alpha = 0$.

The second MAB scenario is the *adversarial scenario*, in which the rewards are picked by an opponent aiming at maximizing the player's total regret. Selection strategies for this scenario usually involve weighted sampling from an incrementally updated probability distribution $p_{a,t} = \mathbb{P}(a_t = a)$, starting from a uniform distribution $p_{a,1} = \frac{1}{|A|}$. A special variant of weighted sampling is the `Exp.3` selection strategy [5], which scales an observed reward with the current selection probability of action a_t. Therefore, if an action with small selection probability yields a high reward, this action will have a much higher chance to be selected in subsequent rounds.

3 Adaptive Algorithmic Behavior

We give three examples of branch-and-bound solving components suitable for an adaptive selection strategy. At the end of each section, we show the individual impact on the academic MIP solver `SCIP` and LP solver `SoPlex` [8] . All experiments are based on a pre-release version of `SCIP` 6.0 and `SoPlex` 3.1.1. The experiments have been performed on a test set MMMc of 496 instances combining the benchmark sets Miplib 3, Miplib 2003, Miplib 2010, and Cor@l (see [10] and [6]). Each experiment has been conducted on a cluster with identical machines to ensure comparable running time measurements.

3.1 Pricing for the Dual Simplex Algorithm

The dual Simplex algorithm is one of the most important techniques for LP problems and key for the LP-based branch-and-bound approach. Among the few algorithmic choices within the Simplex algorithm, one is the determination of the direction to search for a new basic solution, called *pricing step*. In this paper, we consider three well-known and practically proven methods called *devex pricing* [9], *steepest edge pricing*, and *quick start steepest edge* [7]. All methods try to select a direction that is steepest in regard to the dual objective improvement, thereby balancing accuracy of the decision and computational overhead per iteration. Devex pricing requires the least work per iteration but may lead to a higher number of total iterations. On the other hand, steepest edge computes accurate improvement measures that often lead to a considerable smaller iteration count, and an initialization step that can be expensive to compute, depending on the starting basis. While this is less relevant for pure LP solving, in the branch-and-bound context many LP re-optimizations are performed that start from an advanced basis. Here, quick start steepest edge sacrifices accuracy for a faster initialization. We refer to the literature for an in-depth description of these pricing techniques.

In our computational study we compare average LP throughput (LPs per seconds) and running time of three fixed pricers and three bandit selection variants after the root node has been processed, see Table 1. The selection strategies have to select from the set of available actions $\mathcal{A} = \{\texttt{devex},\texttt{qsteep},\texttt{steep}\}$. As the `UCB` strategy (cf. Sec. 2), requires a reward within the interval $[0, 1]$, we scale the measured running time $\tau_{a,t}$ of pricer a at time step t as $\frac{1}{1+\tau_{a,t}/\bar{\tau}_t}$, where $\bar{\tau}_t$ denotes the average running time of all LP resolves so far, independently of the selected pricer. A value of $\alpha = 2$ is used for `UCB`. We also test a `greedy` strategy that always selects the pricer with minimum modified average running time $\bar{\tau}^{\sigma}_{a,t} = \sum_{t':a_t=a} \tau_{a,t'}/(T_{a,t} + \sigma_a)$, using shift values of $\sigma_a = 100$ for `devex` and $\sigma_a = 50$ for the other two. The favorite pricer `devex` is also kept if its LP iteration count stays below 20 on average. The use of the shift values encourages more exploration among the available pricers at the beginning. As a last variant (`weighted`), we use the modified means of the `greedy` selection method as input for a weighted sampling. We initialize the sampling probabilities as $p_{a,t} \propto (\bar{\tau}^{\sigma}_{a,t} + 10^{-4})^{-1}$. Here, the symbol $\propto$ expresses "proportional to", that means up to a scaling constant. Among the fixed pricers, `devex` is clearly the one with the highest LP throughput. The throughput can be increased by 6 % when using `UCB`, and even 14 % when using `greedy`. In contrast, `weighted` does not yield an improved LP throughput. While the `greedy` strategy even yields a 3 % time improvement, the positive result of `UCB` for the LP throughput is still too marginal to make `SCIP` consistently solve problems faster on average.

Table 1: Results for LP pricers. Columns: shifted geom. mean LP throughput (**LPthpt**, shift: 1), time in seconds (**time**, shift: 1), and respective quotients (**LPthpt$_\mathbf{Q}$**, **time$_\mathbf{Q}$**). 105 instances, 4 LP seeds, 900 sec. time limit

Pricer	**solved**	**LPthpt**	**LPthpt$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**
`devex`	64	74.24	1.000	91.82	1.000
`steep`	65	62.66	*0.844*	99.41	*1.083*
`qsteep`	60	58.00	*0.781*	101.13	*1.101*
`UCB`	63	79.02	**1.064**	92.80	1.011
`weighted`	65	71.93	0.969	93.95	1.023
`greedy`	65	85.06	**1.146**	89.11	0.970

3.2 Large Neighborhood Search Heuristics

The first class class of algorithms that we studied in the context of adaptive behavior are the Large Neighborhood Search (LNS) heuristics. Briefly, an LNS heuristic solves an auxiliary MIP under strict working limits, which is derived from the original MIP by fixing variables, adding constraints, and/or changing the objective function. In total, `SCIP` features 10 LNS heuristics, eight of which we integrated into a framework called Adaptive Large Neighborhood Search (ALNS). ALNS adapts the selection of the next LNS heuristic that should be executed based on the average reward observed so far. Besides the adaptive selection procedure, ALNS features more techniques such as a dynamic target fixing rate and a generic variable fixing procedure. ALNS has been first released with `SCIP` 5.0, and further improved for `SCIP` 6.0. Its reward function has been designed to prefer LNS heuristics that find improving solutions with a small computational effort. To this end, it convexly combines a simple indicator function whether an improving solution has been found with the obtained gap that has been closed. The obtained score is then scaled by the involved effort, as a function of the fixing rate and the number of nodes spent inside the sub-MIP.

On the test set used for the present work, the individual parameters for the selection strategies have first been optimized by a separate simulation procedure. With those parameters, ALNS has been called on a total of 445 problem instances. With an `Exp.3` strategy, it could solve two more instances than the `SCIP` default, and yielded a speed-up of 2.3 %, and even 4.6 % on the subset of Miplib 2010 benchmark instances, solving one additional instance. Details about the simulation procedure as well as the results will be presented in an own technical report about ALNS that is currently under preparation.

3.3 Diving Heuristics

Another class of heuristics are *diving heuristics*. Starting from a fractional LP solution, diving heuristics explore an auxiliary search tree in a depth-first fashion. The branching rules used in diving heuristics usually tend towards feasibility. In contrast to that, branching rules of the main search process, e.g., reliability branching [2], focus on a good subdivision of the problem. For an overview of the diving heuristics available in `SCIP`, we refer to [3]. In `SCIP`, diving heuristics also provide useful search information. For example, domain propagation is applied after rounding variables, to reduce variable domains or

Table 2: Aggregated results for adaptive diving over three random seeds. Columns: shifted geom. mean of generated nodes (**nodes**, shift: 100), solving time in seconds (**time**, shift: 1), and respective quotients (**nodes$_\mathbf{Q}$** and **time$_\mathbf{Q}$**).

		`default`			`adaptivediving`		
	instances	**solved**	**nodes**	**time**	**solved**	**nodes$_\mathbf{Q}$**	**time$_\mathbf{Q}$**
all	491	320	2550	152	327	**0.938**	0.958
affected	284	274	1120	46	281	**0.939**	**0.945**
[10,tilim]	245	210	2693	158	217	**0.899**	**0.922**
[100,tilim]	144	109	5821	526	116	**0.904**	**0.909**
MIPLIB 2010	86	67	5064	301	70	**0.930**	0.969

even detect infeasibility. The latter can be analyzed by conflict analysis techniques, e.g., [1, 11], to derive additional global information.

For our computational experiments, we have extended `SCIP` by a new primal heuristic plugin that selects one out of nine available diving heuristics at each call. A weighted sampling is used as selection strategy, where the sample weight of a diving heuristic (action) a is computed as

$$p_{a,t} \propto \left(\frac{\sum_{t'} b_{a,t'} + 100}{\sum_{t'} c_{a,t'} + 100} + 10^{-4} \right)^{-1}$$

with $b_{a,t'}$ denoting the number of backtracks performed by a at round t', and $c_{a,t'}$ denoting the number of conflict constraints generated. Both values are 0 if a has not been selected in round t'.

Table 2 compares the performance of `SCIP` in its standard configuration (`default`) and with adaptive diving selection (`adaptivediving`) on the MMMC test set with a time limit of one hour. An instance is called "solved" only if it has been solved consistently with each of three tested random seeds. Using `adaptivediving`, `SCIP` could solve seven more instances consistently within the time limit. On non-trivial instances where at least one configuration needs 10 or more seconds, it leads to speed up of almost 8 %. On the state-of-the-art benchmark set MIPLIB 2010, `adaptivediving` leads to a slight performance improvement by 3 % and three more solved instances.

4 Conclusion

We have proposed adaptive control mechanisms for three algorithm classes within `SCIP`. For each class, we introduce a suitable reward function to rank the different algorithms. The adaptive LP pricing intuitively has the nature of a stochastic bandit scenario. This intuition is confirmed by our results, in which the greedy and UCB strategy yield higher LP throughputs than any fixed pricer. On the contrary, for primal heuristics, it is sufficient to select successful ones more often, which is why a weighted sampling selection strategy can be preferred. In every case, we obtain considerable performance improvements on a diverse set of general MIP instances.

While the work on the two heuristic frameworks is almost completed, the adaptive LP pricing is still prototypical. Future work on this requires to replace the measured solving time by a deterministic reward criterion. For the primal heuristics, it is interesting to compare the obtained results with new selection principles that are not based on past rewards.

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Table 3: Computational results over three random seeds on MMMc test set comparing `SCIP` in its default configuration (`default`), without diving heuristics at all (`nodiving`), and extended by the new adaptive diving heuristics (`adaptivediving`). The table shows the absolute and relative numbers of nodes (**nodes**, $\textbf{nodes}_\mathbf{Q}$) and solving time (**time**, $\textbf{time}_\mathbf{Q}$). In addition, the average number of feasible solutions found by `adaptivediving` is shown (**nsols**). The right-most column (**impr.sols**) indicates whether at least one improving solution was found by `adaptivediving` with at least one seed (✓). Relative changes by at least 5% are highlighted in bold and blue (**improvement**) or italic and red (*deterioration*).

	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	$\textbf{nodes}_\mathbf{Q}$	**time**	$\textbf{time}_\mathbf{Q}$	**nodes**	$\textbf{nodes}_\mathbf{Q}$	**time**	$\textbf{time}_\mathbf{Q}$	**nsols**	**impr.sols**
10teams	212.7	14.0	471.8	*2.22*	15.9	*1.14*	58.1	**0.27**	9.2	**0.66**	–	
22433	3.0	2.0	3.7	*1.23*	2.2	*1.08*	3.0	1.01	1.6	**0.78**	1.0	✓
23588	542.7	4.2	529.6	0.98	4.2	0.99	489.2	**0.90**	4.2	0.99	–	
30n20b8	43.7	153.6	131.9	*3.02*	246.2	*1.60*	33.3	**0.76**	161.5	*1.05*	1.0	✓
Test3	1.9	4.2	1.9	1.00	3.9	**0.93**	1.3	**0.69**	3.5	**0.84**	0.3	✓
a1c1s1	90230.8	3600.0	88560.4	0.98	3600.0	1.00	88181.4	0.98	3600.0	1.00	7.3	✓
acc-tight5	569.2	99.4	512.9	**0.90**	72.7	**0.73**	817.3	*1.44*	123.7	*1.24*	–	
aflow30a	533.1	16.1	846.5	*1.59*	19.5	*1.21*	678.2	*1.27*	16.8	1.04	0.7	✓
aflow40b	20770.6	561.1	13399.8	**0.65**	521.8	**0.93**	16235.3	**0.78**	577.8	1.03	–	
air03	2.0	2.1	2.0	1.00	2.0	0.96	2.0	1.00	1.9	**0.91**	1.3	✓
air04	77.5	52.3	91.1	*1.18*	43.3	**0.83**	48.6	**0.63**	45.6	**0.87**	0.7	✓
air05	462.1	29.8	363.8	**0.79**	27.2	**0.91**	308.2	**0.67**	29.2	0.98	–	
alignínq	623.6	25.9	1509.8	*2.42*	25.9	1.00	1658.0	*2.66*	24.3	**0.94**	–	
app1-2	19.8	771.0	36.6	*1.85*	753.4	0.98	23.6	*1.19*	741.1	0.96	–	
arki001	632928.1	3600.0	569989.2	**0.90**	3600.0	1.00	538136.2	**0.85**	3600.0	1.00	4.0	✓
ash608gpia-3col	3.6	28.1	7.8	*2.15*	26.8	0.95	3.0	**0.82**	27.9	0.99	–	
atlanta-ip	6341.3	3600.0	5933.9	**0.94**	3600.0	1.00	4965.6	**0.78**	3600.0	1.00	–	
bab5	40843.0	3600.0	28727.2	**0.70**	3600.0	1.00	41647.2	1.02	3600.0	1.00	1.7	✓
bc	15073.0	989.1	16115.8	*1.07*	1034.9	1.05	17845.8	*1.18*	1086.5	*1.10*	0.3	✓
bc1	2074.6	186.1	4620.7	*2.23*	209.4	*1.12*	2391.8	*1.15*	163.5	**0.88**	0.3	✓
beasleyC3	27.4	28.6	119.6	*4.37*	34.9	*1.22*	123.5	*4.51*	41.9	*1.46*	14.7	✓
bell3a	2470.4	0.9	1651.6	**0.67**	0.8	**0.81**	1307.7	**0.53**	0.6	**0.68**	26.0	✓
bell5	367.0	0.5	465.5	*1.27*	0.5	1.00	605.8	*1.65*	0.5	*1.05*	43.3	✓
biella1	4831.4	1027.1	2463.6	**0.51**	686.8	**0.67**	3007.6	**0.62**	744.5	**0.72**	1.0	✓
bienst1	13512.7	115.3	11775.7	**0.87**	100.8	**0.87**	14638.0	*1.08*	119.5	1.04	4.7	✓
bienst2	70278.9	569.3	53181.0	**0.76**	434.3	**0.76**	55481.9	**0.79**	451.8	**0.79**	2.0	✓
binkar10_1	2453.0	31.5	2530.8	1.03	28.2	**0.90**	3255.5	*1.33*	40.1	*1.27*	1.3	✓
blend2	1355.4	1.4	742.1	**0.55**	0.7	**0.52**	1166.8	**0.86**	1.2	**0.87**	–	
bley_xl1	9.6	182.8	8.5	**0.89**	181.2	0.99	1.7	**0.17**	168.7	**0.92**	1.0	✓
bnatt350	9721.7	963.2	4776.2	**0.49**	467.1	**0.48**	4615.4	**0.47**	542.8	**0.56**	–	

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Table 3: Computational results over three random seeds on MMMc test set comparing `SCIP` in its default configuration (`default`), without diving heuristics at all (`nodiving`), and extended by the new adaptive diving heuristics (`adaptivediving`). The table shows the absolute and relative numbers of nodes (**nodes**, **nodes$_Q$**) and solving time (**time**, **time$_Q$**). In addition, the average number of feasible solutions found by `adaptivediving` is shown (**nsols**). The right-most column (**impr.sols**) indicates whether at least one improving solution was found by `adaptivediving` with at least one seed (✓). Relative changes by at least 5% are highlighted in bold and blue (**improvement**) or italic and red (*deterioration*).

	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	**nodes$_Q$**	**time**	**time$_Q$**	**nodes**	**nodes$_Q$**	**time**	**time$_Q$**	**nsols**	**impr.sols**
cap6000	2021.9	3.3	2195.9	*1.09*	3.0	**0.89**	1937.3	0.96	3.2	0.96	50.7	
core2536-691	164.5	196.3	149.9	**0.91**	137.3	**0.70**	83.2	**0.51**	130.1	**0.66**	0.3	✓
cov1075	37461.2	108.7	26781.9	**0.71**	69.8	**0.64**	21022.7	**0.56**	71.1	**0.65**	8.7	✓
csched010	227915.0	3600.0	207252.2	**0.91**	3600.0	1.00	204593.6	**0.90**	3505.2	0.97	0.3	✓
d10200	484293.5	3600.0	612265.4	*1.26*	3600.0	1.00	401617.9	**0.83**	3600.0	1.00	0.7	✓
d20200	61761.8	3600.0	164217.2	*2.66*	3600.0	1.00	73368.6	*1.19*	3600.0	1.00	1.7	✓
dano3_3	12.4	112.9	14.8	*1.19*	112.7	1.00	6.6	**0.54**	116.8	1.03	0.7	✓
dano3_4	10.4	136.9	10.2	0.97	134.8	0.98	9.0	**0.86**	150.6	*1.10*	1.0	✓
dano3_5	200.7	330.6	192.1	0.96	284.6	**0.86**	145.8	**0.73**	275.2	**0.83**	0.7	✓
dano3mip	460.6	3600.0	1042.9	*2.26*	3600.0	1.00	495.6	*1.08*	3600.0	1.00	–	
danoint	1181425.3	3558.1	1125317.4	0.95	3122.3	**0.88**	1113895.2	**0.94**	3231.1	**0.91**	1.7	✓
dcmulti	86.0	2.4	55.9	**0.65**	2.3	0.97	99.5	*1.16*	2.0	**0.85**	1.3	✓
dfn-gwin-UUM	22916.1	99.2	24228.9	*1.06*	99.8	1.01	23843.1	1.04	102.0	1.03	140.7	✓
disctom	1.0	5.9	1.0	1.00	5.9	1.00	1.0	1.00	5.9	1.00	–	
ds	594.5	3600.0	1019.6	*1.72*	3600.0	1.00	454.2	**0.76**	3600.0	1.00	58.3	✓
dsbmip	9.6	1.6	16.8	*1.76*	1.6	1.02	4.8	**0.51**	0.9	**0.56**	1.3	✓
egout	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	1.0	✓
eil33-2	631.9	67.2	679.0	*1.07*	73.8	*1.10*	729.4	*1.15*	73.8	*1.10*	1.3	✓
eilB101	10544.5	239.0	9813.6	**0.93**	218.8	**0.92**	17189.5	*1.63*	336.4	*1.41*	6.3	✓
enigma	935.3	0.5	431.0	**0.46**	0.5	0.96	326.1	**0.35**	0.5	0.96	–	
enlight13	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
enlight14	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
ex9	1.0	27.5	1.0	1.00	28.1	1.02	1.0	1.00	28.2	1.02	–	
fast0507	1025.5	235.9	803.7	**0.78**	175.9	**0.75**	745.5	**0.73**	189.5	**0.80**	7.7	✓
fiball	5028.8	2113.6	9336.7	*1.86*	3491.6	*1.65*	4384.4	**0.87**	1847.5	**0.87**	1.0	✓
fiber	4.0	1.7	4.6	*1.16*	1.9	*1.12*	4.0	1.00	1.7	0.98	3.3	✓
fixnet6	3.3	4.7	3.0	**0.90**	4.6	0.97	3.3	1.00	5.1	*1.08*	10.0	✓
flugpl	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	1.0	✓
gen	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
germanrr	1325.5	3600.0	2893.7	*2.18*	3600.0	1.00	906.8	**0.68**	3600.0	1.00	3.3	✓

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	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nsols**	**impr.sols**
gesa2	1.3	0.5	1.3	1.00	0.5	1.00	1.7	*1.25*	0.5	1.00	1.0	✓
gesa2-o	2.6	0.9	2.6	1.00	0.8	**0.94**	2.0	**0.76**	0.7	**0.78**	1.0	✓
gesa3	8.8	3.4	6.9	**0.79**	3.2	0.95	5.9	**0.68**	3.9	*1.15*	1.3	✓
gesa3_o	6.6	2.8	7.3	*1.10*	4.0	*1.44*	6.0	**0.90**	3.3	*1.18*	0.3	✓
glass4	2077361.5	2920.8	2458448.3	*1.18*	3600.0	*1.23*	1030344.4	**0.50**	1401.2	**0.48**	6.0	✓
gmu-35-40	1461071.3	3600.0	3247969.2	*2.22*	3600.0	1.00	1687277.3	*1.16*	3600.0	1.00	2.0	✓
gt2	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
haprp	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
harp2	2203367.5	1079.0	2492591.7	*1.13*	1142.8	*1.06*	1644638.6	**0.75**	767.6	**0.71**	22.7	✓
iis-100-0-cov	86589.8	532.6	88130.1	1.02	511.1	0.96	86035.9	0.99	521.9	0.98	9.0	✓
iis-bupa-cov	174929.6	2006.0	158889.8	**0.91**	1725.9	**0.86**	160776.5	**0.92**	1924.5	0.96	10.3	✓
iis-pima-cov	7264.1	311.6	6351.2	**0.87**	270.2	**0.87**	6105.1	**0.84**	272.3	**0.87**	8.3	✓
khb05250	3.2	0.5	2.0	**0.62**	0.5	0.99	3.2	1.00	0.5	0.99	2.3	✓
l152lav	32.4	2.2	35.4	*1.09*	2.5	*1.12*	56.2	*1.74*	3.3	*1.49*	0.7	✓
lectsched-4-obj	1473.1	33.3	243.9	**0.17**	19.5	**0.59**	38.6	**0.03**	12.0	**0.36**	0.3	✓
leo1	45925.9	3600.0	56743.9	*1.24*	3600.0	1.00	57568.8	*1.25*	3600.0	1.00	0.3	✓
leo2	61837.4	3600.0	63021.1	1.02	3600.0	1.00	62135.3	1.00	3600.0	1.00	–	
liu	828433.0	3600.0	931693.0	*1.12*	3600.0	1.00	665812.4	**0.80**	3600.0	1.00	31.3	✓
lrn	1134.1	3600.0	1402.7	*1.24*	3600.0	1.00	1535.3	*1.35*	3600.0	1.00	3.0	✓
lseu	58.1	0.5	95.4	*1.64*	0.5	1.05	82.6	*1.42*	0.6	*1.13*	0.3	✓
m100n500k4r1	2235185.7	3600.0	2537595.1	*1.14*	3600.0	1.00	2329569.4	1.04	3600.0	1.00	8.0	✓
macrophage	9683.9	243.4	6345.3	**0.66**	146.3	**0.60**	7636.8	**0.79**	165.3	**0.68**	1.0	✓
manna81	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
map18	266.1	261.6	271.4	1.02	222.6	**0.85**	256.2	0.96	332.9	*1.27*	0.7	✓
map20	291.9	254.2	265.4	**0.91**	186.2	**0.73**	236.9	**0.81**	250.4	0.98	0.3	✓
markshare1	19663456.6	3600.0	25464037.1	*1.29*	3600.0	1.00	20584380.8	1.05	3600.0	1.00	16.3	✓
markshare2	4423023.0	3600.0	10510623.5	*2.38*	3600.0	1.00	4377939.3	0.99	3600.0	1.00	13.0	✓
mas74	6338096.1	1695.5	4807477.7	**0.76**	1257.8	**0.74**	6424904.2	1.01	1644.7	0.97	2.0	✓
mas76	215133.6	89.3	203671.4	**0.95**	71.9	**0.81**	265165.3	*1.23*	97.8	*1.09*	0.7	✓
mcsched	9526.9	223.0	6921.6	**0.73**	171.3	**0.77**	8695.2	**0.91**	204.5	**0.92**	1.0	✓

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	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	$\mathbf{nodes_Q}$	**time**	$\mathbf{time_Q}$	**nodes**	$\mathbf{nodes_Q}$	**time**	$\mathbf{time_Q}$	**nsols**	**impr.sols**
mik-250-1-100-1	17563.0	54.7	30966.9	*1.76*	82.2	*1.50*	23661.6	*1.35*	67.8	*1.24*	20.7	
mine-166-5	1653.8	60.1	1005.9	**0.61**	48.6	**0.81**	570.9	**0.34**	71.3	*1.19*	0.7	✓
mine-90-10	25782.5	173.9	21434.8	**0.83**	188.9	*1.09*	31446.8	*1.22*	201.6	*1.16*	2.3	✓
misc03	31.0	0.7	17.8	**0.57**	0.7	**0.88**	25.2	**0.81**	0.7	0.97	0.3	✓
misc06	3.3	0.6	3.0	**0.90**	0.5	**0.85**	3.0	**0.90**	0.6	0.97	6.7	✓
misc07	8546.6	13.1	5314.6	**0.62**	9.7	**0.73**	4884.8	**0.57**	10.1	**0.77**	0.3	✓
mitre	1.0	10.2	1.0	1.00	10.2	1.00	1.0	1.00	10.2	1.00	–	
mkc	387333.6	3600.0	384365.8	0.99	3600.0	1.00	435964.5	*1.13*	3600.0	1.00	0.3	✓
mkc1	28036.1	203.7	320870.5	*11.45*	1125.8	*5.53*	455465.8	*16.25*	1398.1	*6.86*	1.0	✓
mod008	2.0	0.5	2.0	1.00	0.5	1.00	2.0	1.00	0.5	1.00	9.7	
mod010	2.0	0.5	2.0	1.00	0.5	1.00	2.0	1.00	0.5	1.00	1.0	✓
mod011	643.0	373.1	777.3	*1.21*	402.4	*1.08*	615.4	0.96	360.7	0.97	1.3	✓
modglob	2.0	0.5	2.0	1.00	0.5	1.00	2.0	1.00	0.5	1.00	4.3	✓
momentum1	7017.3	3600.0	11426.1	*1.63*	3600.0	1.00	12250.4	*1.75*	3600.0	1.00	–	
momentum2	40632.1	3600.0	36985.8	**0.91**	3600.0	1.00	33270.2	**0.82**	3600.0	1.00	1.3	✓
momentum3	134.8	3600.0	141.6	*1.05*	3600.0	1.00	77.3	**0.57**	3600.0	1.00	–	
msc98-ip	3522.6	3600.0	3635.1	1.03	3600.0	1.00	1850.0	**0.53**	3600.0	1.00	0.3	✓
mspp16	3.0	428.1	4.3	*1.43*	402.8	**0.94**	4.9	*1.64*	452.7	*1.06*	–	
mzzv11	1704.6	331.3	1538.3	**0.90**	305.4	**0.92**	958.2	**0.56**	264.1	**0.80**	1.0	✓
mzzv42z	177.3	161.4	276.4	*1.56*	167.8	1.04	66.8	**0.38**	181.0	*1.12*	1.0	✓
n3div36	88449.9	3600.0	91767.9	1.04	3600.0	1.00	89341.7	1.01	3600.0	1.00	–	
n3seq24	151.2	3600.0	459.2	*3.04*	3600.0	1.00	74.9	**0.49**	3600.0	1.00	–	
n4-3	2835.7	178.6	2449.8	**0.86**	159.7	**0.89**	3467.0	*1.22*	220.1	*1.23*	73.0	✓
nag	31388.4	3600.0	34045.5	*1.08*	3600.0	1.00	29353.0	**0.94**	3600.0	1.00	3.7	✓
neos-1053234	418752.8	2172.9	922222.1	*2.20*	2872.2	*1.32*	400453.6	0.96	2070.5	0.95	–	
neos-1053591	2377.9	3.8	2540.2	*1.07*	3.7	0.98	2128.5	**0.90**	3.3	**0.87**	1.0	✓
neos-1056905	4956678.8	3235.8	8191129.7	*1.65*	3600.0	*1.11*	5087261.1	1.03	2688.0	**0.83**	3.7	✓
neos-1058477	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
neos-1061020	869.7	199.6	1145.4	*1.32*	221.1	*1.11*	866.2	1.00	205.0	1.03	–	
neos-1062641	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	

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	default		nodiving				adaptivediving					
Instance	**nodes**	**time**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nsols**	**impr.sols**
neos-1067731	75928.2	3600.0	104378.6	*1.38*	3600.0	1.00	82587.7	*1.09*	3600.0	1.00	1.3	✓
neos-1096528	3942.2	1766.6	2716.6	**0.69**	1684.0	0.95	5263.6	*1.33*	2148.4	*1.22*	0.3	✓
neos-1109824	107.3	13.5	163.2	*1.52*	14.1	1.05	435.1	*4.05*	22.5	*1.67*	0.3	✓
neos-1112782	907703.2	3600.0	867034.3	0.95	3600.0	1.00	947311.6	1.04	3600.0	1.00	–	
neos-1112787	401700.9	3600.0	423880.7	*1.05*	3600.0	1.00	409889.8	1.02	3600.0	1.00	–	
neos-1120495	16.2	11.7	10.3	**0.64**	4.9	**0.42**	7.4	**0.46**	5.9	**0.50**	1.0	✓
neos-1121679	19581278.4	3600.0	25447433.5	*1.30*	3600.0	1.00	20612095.3	*1.05*	3600.0	1.00	16.3	✓
neos-1122047	1.0	6.0	1.0	1.00	6.0	1.00	1.0	1.00	6.0	1.01	–	
neos-1126860	4590.7	561.7	4983.3	*1.09*	479.4	**0.85**	4643.7	1.01	561.5	1.00	1.0	✓
neos-1140050	549.7	3600.0	407.3	**0.74**	3600.0	1.00	600.9	*1.09*	3600.0	1.00	–	
neos-1151496	29.8	10.3	94.0	*3.16*	19.1	*1.85*	59.5	*2.00*	16.7	*1.62*	–	
neos-1171448	15.1	19.6	79.1	*5.25*	52.2	*2.67*	1.0	**0.07**	13.9	**0.71**	0.7	✓
neos-1171692	170.2	33.0	4526.5	*26.60*	2672.2	*81.01*	8.3	**0.05**	10.7	**0.32**	0.7	✓
neos-1171737	1761.3	3600.0	2519.8	*1.43*	3600.0	1.00	2756.3	*1.56*	3600.0	1.00	0.3	✓
neos-1173026	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	0.7	✓
neos-1200887	5173.7	10.6	5985.8	*1.16*	10.8	1.02	3588.3	**0.69**	9.0	**0.85**	1.0	✓
neos-1208069	1180.1	50.1	1305.2	*1.11*	53.3	*1.06*	824.9	**0.70**	59.0	*1.18*	–	
neos-1208135	3058.6	291.4	3717.6	*1.22*	182.2	**0.62**	2013.0	**0.66**	132.8	**0.46**	1.0	✓
neos-1211578	7614.2	4.4	5431.7	**0.71**	3.3	**0.75**	5667.8	**0.74**	3.4	**0.79**	1.0	✓
neos-1215259	1029.6	39.6	911.4	**0.89**	36.1	**0.91**	1141.0	*1.11*	49.1	*1.24*	–	
neos-1215891	3055.5	309.3	7638.3	*2.50*	533.9	*1.73*	2312.4	**0.76**	210.7	**0.68**	–	
neos-1223462	153.5	152.1	236.6	*1.54*	172.2	*1.13*	363.3	*2.37*	182.4	*1.20*	0.3	✓
neos-1224597	12.2	11.2	24.6	*2.02*	11.2	1.00	12.2	1.00	10.4	**0.93**	–	
neos-1225589	3.0	0.5	7.3	*2.44*	0.5	0.97	7.9	*2.64*	0.5	1.02	33.7	✓
neos-1228986	24206.5	12.4	45629.4	*1.89*	18.0	*1.45*	23074.2	0.95	11.1	**0.89**	1.0	✓
neos-1281048	41.6	7.2	39.8	0.96	5.7	**0.79**	35.1	**0.84**	6.2	**0.86**	0.3	✓
neos-1311124	7494756.8	3600.0	7226683.0	0.96	3600.0	1.00	7537735.7	1.01	3600.0	1.00	1.0	✓
neos-1324574	17185.2	1457.0	43359.1	*2.52*	3401.8	*2.33*	16764.4	0.98	1226.0	**0.84**	–	
neos-1330346	182663.5	3451.6	146965.9	**0.81**	3600.0	1.04	198130.5	*1.08*	2984.5	**0.86**	–	
neos-1330635	1.0	0.5	1.0	1.00	0.5	1.00	1.3	*1.32*	0.5	1.00	0.3	✓

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	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	**$\mathbf{nodes_Q}$**	**time**	**$\mathbf{time_Q}$**	**nodes**	**$\mathbf{nodes_Q}$**	**time**	**$\mathbf{time_Q}$**	**nsols**	**impr.sols**
neos-1337307	354039.9	3600.0	339961.0	0.96	3600.0	1.00	350512.4	0.99	3600.0	1.00	0.3	✓
neos-1346382	6883767.2	3600.0	7740568.6	*1.12*	3600.0	1.00	5950992.0	**0.86**	3600.0	1.00	1.0	✓
neos-1354092	213.7	3600.0	258.0	*1.21*	3600.0	1.00	144.5	**0.68**	3600.0	1.00	–	
neos-1367061	1.0	25.9	1.0	1.00	26.1	1.00	1.0	1.00	26.1	1.01	–	
neos-1396125	11385.0	93.1	14679.1	*1.29*	92.7	1.00	20326.1	*1.78*	119.4	*1.28*	0.3	✓
neos-1407044	33.6	3600.0	41.9	*1.25*	3600.0	1.00	33.6	1.00	3600.0	1.00	–	
neos-1413153	2.3	3.2	2.3	1.00	3.2	1.00	2.9	*1.26*	3.4	*1.06*	1.3	✓
neos-1415183	1.7	4.5	1.7	1.00	4.5	1.00	1.7	1.00	4.8	*1.08*	0.7	✓
neos-1417043	1.0	1141.4	1.0	1.00	1140.7	1.00	1.0	1.00	1135.6	0.99	–	
neos-1420205	6094.2	4.0	10093.1	*1.66*	5.7	*1.42*	14549.0	*2.39*	8.4	*2.08*	0.3	✓
neos-1420546	836.1	3600.0	1342.0	*1.60*	3600.0	1.00	686.0	**0.82**	3600.0	1.00	4.7	✓
neos-1420790	73156.0	3600.0	93275.3	*1.27*	3600.0	1.00	48949.8	**0.67**	3600.0	1.00	7.3	✓
neos-1423785	16498.6	3600.0	10194.9	**0.62**	3600.0	1.00	22543.0	*1.37*	3600.0	1.00	6.0	✓
neos-1425699	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
neos-1426662	2592408.2	3600.0	3174356.0	*1.22*	3600.0	1.00	3082790.9	*1.19*	3600.0	1.00	1.0	✓
neos-1427181	1764466.7	1815.7	2450802.5	*1.39*	3600.0	*1.98*	958984.3	**0.54**	1018.7	**0.56**	1.0	✓
neos-1427261	560816.0	3600.0	1597704.9	*2.85*	3600.0	1.00	606443.5	*1.08*	3600.0	1.00	2.3	✓
neos-1429185	2500985.2	3600.0	3368842.0	*1.35*	3600.0	1.00	2608021.7	1.04	3600.0	1.00	1.3	✓
neos-1429212	1125.7	3600.0	1599.3	*1.42*	3600.0	1.00	966.5	**0.86**	3600.0	1.00	–	
neos-1429461	4009112.2	3600.0	4776886.7	*1.19*	3600.0	1.00	4324122.2	*1.08*	3600.0	1.00	1.3	✓
neos-1430701	35061.4	27.0	55174.3	*1.57*	33.5	*1.24*	43063.8	*1.23*	30.6	*1.13*	1.7	✓
neos-1430811	261.0	3600.0	905.8	*3.47*	3600.0	1.00	380.5	*1.46*	3600.0	1.00	–	
neos-1436709	2055406.2	3600.0	2410935.7	*1.17*	3600.0	1.00	2096401.2	1.02	3600.0	1.00	1.0	✓
neos-1436713	356491.2	3600.0	1013352.9	*2.84*	3600.0	1.00	450314.8	*1.26*	3600.0	1.00	1.7	✓
neos-1437164	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
neos-1439395	322812.0	179.9	609646.7	*1.89*	297.7	*1.66*	247735.4	**0.77**	135.0	**0.75**	1.0	✓
neos-1440225	2972.8	54.6	5014.9	*1.69*	83.0	*1.52*	1873.4	**0.63**	37.2	**0.68**	–	
neos-1440447	3342.2	3.9	4243.4	*1.27*	4.3	*1.09*	3604.4	*1.08*	4.6	*1.18*	1.0	✓
neos-1440457	1869959.8	3600.0	1930525.2	1.03	3600.0	1.00	1743319.3	**0.93**	3600.0	1.00	1.7	✓
neos-1440460	3845061.5	2496.2	5447207.8	*1.42*	3600.0	*1.44*	4703501.0	*1.22*	3600.0	*1.44*	1.3	✓

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	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	**nodes**$_{\mathbf{Q}}$	**time**	**time**$_{\mathbf{Q}}$	**nodes**	**nodes**$_{\mathbf{Q}}$	**time**	**time**$_{\mathbf{Q}}$	**nsols**	**impr.sols**
neos-1441553	1.3	1.9	1.3	1.00	1.6	**0.84**	1.0	**0.76**	1.4	**0.73**	0.3	✓
neos-1442119	1631305.1	3600.0	1950306.8	*1.20*	3600.0	1.00	1568703.4	0.96	3600.0	1.00	1.0	✓
neos-1442657	2337818.1	3600.0	2716061.2	*1.16*	3600.0	1.00	2305938.3	0.99	3600.0	1.00	1.0	✓
neos-1445532	1244.9	3600.0	2259.8	*1.81*	3600.0	1.00	2323.8	*1.87*	3600.0	1.00	1.0	✓
neos-1445738	8033.9	3600.0	7220.6	**0.90**	3600.0	1.00	9033.8	*1.12*	3600.0	1.00	4.3	✓
neos-1445743	51.1	44.5	19.3	**0.38**	51.6	*1.16*	3.3	**0.07**	52.2	*1.17*	4.3	✓
neos-1445755	36.2	45.4	67.0	*1.85*	49.5	*1.09*	156.8	*4.33*	43.2	**0.95**	5.0	✓
neos-1445765	147.9	41.8	124.1	**0.84**	40.1	0.96	256.5	*1.74*	44.7	*1.07*	6.0	✓
neos-1451294	2755.2	1154.5	4767.2	*1.73*	1701.7	*1.47*	1673.6	**0.61**	850.4	**0.74**	1.0	✓
neos-1456979	26421.6	3600.0	19765.3	**0.75**	3600.0	1.00	28764.2	*1.09*	3600.0	1.00	1.3	✓
neos-1460246	1564054.1	3600.0	3073044.6	*1.97*	3600.0	1.00	1673384.3	*1.07*	3600.0	1.00	–	
neos-1460265	113.6	5.5	127.9	*1.13*	5.9	*1.06*	99.6	**0.88**	4.6	**0.84**	1.0	✓
neos-1460543	4967.7	3600.0	10189.0	*2.05*	3600.0	1.00	5543.7	*1.12*	3600.0	1.00	3.0	✓
neos-1460641	318140.4	3600.0	248512.6	**0.78**	3600.0	1.00	295331.9	**0.93**	3600.0	1.00	2.7	✓
neos-1461051	2596.5	26.0	2541.2	0.98	25.7	0.99	2017.5	**0.78**	22.9	**0.88**	–	
neos-1464762	441568.6	3600.0	427882.2	0.97	3600.0	1.00	257345.7	**0.58**	3600.0	1.00	1.7	✓
neos-1467067	7214231.6	3600.0	7437876.4	1.03	3600.0	1.00	6794105.7	**0.94**	3600.0	1.00	1.0	✓
neos-1467371	427774.6	3600.0	325660.7	**0.76**	3600.0	1.00	377995.4	**0.88**	3600.0	1.00	0.7	✓
neos-1467467	70309.6	3600.0	89027.4	*1.27*	3600.0	1.00	38093.5	**0.54**	3600.0	1.00	0.3	✓
neos-1480121	127.7	0.5	330.4	*2.59*	5.5	*10.97*	119.9	**0.94**	4.2	*8.43*	1.7	✓
neos-1489999	27.9	2.8	26.9	0.96	2.6	**0.94**	38.7	*1.39*	3.7	*1.33*	0.3	✓
neos-1516309	1.0	0.5	1.0	1.00	0.5	1.01	1.0	1.00	0.5	1.00	–	
neos-1582420	860.1	44.1	486.0	**0.56**	30.8	**0.70**	215.7	**0.25**	29.7	**0.67**	0.3	✓
neos-1593097	27619.9	3600.0	24674.4	**0.89**	3600.0	1.00	25109.3	**0.91**	3600.0	1.00	1.7	✓
neos-1595230	34795.5	237.8	38402.7	*1.10*	198.6	**0.83**	24084.1	**0.69**	177.1	**0.74**	–	
neos-1597104	17.6	227.6	5.0	**0.28**	180.6	**0.79**	11.1	**0.63**	212.4	**0.93**	–	
neos-1599274	1.0	0.9	1.0	1.00	0.9	0.96	1.0	1.00	0.9	**0.94**	1.0	✓
neos-1601936	2893.9	2650.5	2107.6	**0.73**	2859.4	*1.08*	962.1	**0.33**	1534.9	**0.58**	1.0	✓
neos-1603512	13.0	2.0	13.7	*1.05*	1.9	0.96	8.8	**0.67**	1.9	**0.92**	–	
neos-1603518	20.6	5.8	28.9	*1.40*	6.4	*1.10*	26.0	*1.26*	6.1	*1.06*	–	

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	default		nodiving				adaptivediving					
Instance	**nodes**	**time**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nsols**	**impr.sols**
neos-1603965	32040.5	3600.0	46357.4	*1.45*	3600.0	1.00	40267.8	*1.26*	3600.0	1.00	1.0	✓
neos-1605061	435.8	3600.0	428.3	0.98	3600.0	1.00	611.6	*1.40*	3600.0	1.00	–	
neos-1605075	1656.5	3600.0	1200.3	**0.72**	2733.4	**0.76**	1028.8	**0.62**	3600.0	1.00	1.7	✓
neos-1616732	1220610.5	3191.9	1238740.1	1.01	3383.6	*1.06*	1233346.4	1.01	3199.1	1.00	7.3	✓
neos-1620770	592673.2	3600.0	1065280.6	*1.80*	3600.0	1.00	610626.9	1.03	3600.0	1.00	–	
neos-1620807	1027.9	5.0	1562.3	*1.52*	5.7	*1.14*	2123.4	*2.07*	7.7	*1.53*	–	
neos-1622252	884058.2	3227.6	928864.0	*1.05*	2502.4	**0.78**	836096.5	**0.95**	3600.0	*1.11*	–	
neos-430149	32846.4	30.9	33951.8	1.03	30.3	0.98	23787.7	**0.72**	23.6	**0.76**	0.3	✓
neos-476283	419.3	140.1	500.9	*1.20*	138.8	0.99	638.7	*1.52*	156.5	*1.12*	1.3	✓
neos-480878	11810.1	46.3	9748.7	**0.82**	34.6	**0.75**	8826.7	**0.75**	38.3	**0.83**	29.0	✓
neos-494568	4.9	16.5	6.3	*1.28*	21.4	*1.29*	4.1	**0.84**	17.3	1.05	0.3	✓
neos-495307	71326.2	3600.0	104866.4	*1.47*	3600.0	1.00	57285.4	**0.80**	3600.0	1.00	134.7	
neos-498623	40.5	45.5	55.5	*1.37*	49.0	*1.07*	6.3	**0.16**	35.2	**0.77**	0.3	✓
neos-501453	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
neos-501474	2.0	0.5	2.0	1.00	0.5	1.00	2.0	1.00	0.5	1.00	–	
neos-503737	24214.7	536.5	14562.5	**0.60**	330.4	**0.62**	4680.7	**0.19**	225.8	**0.42**	1.3	✓
neos-504674	6176.5	42.6	5774.2	**0.94**	38.9	**0.91**	6190.0	1.00	44.8	*1.05*	1.0	✓
neos-504815	2257.0	14.4	2934.0	*1.30*	18.2	*1.26*	2245.2	0.99	14.8	1.03	1.0	✓
neos-506422	5285.9	48.6	3985.5	**0.75**	37.6	**0.77**	2743.3	**0.52**	35.3	**0.72**	2.0	✓
neos-506428	265.5	3516.6	186.3	**0.70**	3600.0	1.02	155.2	**0.58**	3600.0	1.02	0.7	✓
neos-512201	3177.8	28.3	2450.2	**0.77**	24.9	**0.88**	3421.7	*1.08*	29.0	1.02	1.7	✓
neos-522351	1.0	1.2	1.0	1.00	1.3	1.02	1.0	1.00	1.2	0.99	–	
neos-525149	1.0	3.3	7.8	*7.85*	4.4	*1.35*	1.0	1.00	2.6	**0.80**	1.0	✓
neos-530627	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
neos-538867	32928.4	82.0	34850.1	*1.06*	102.7	*1.25*	25291.6	**0.77**	64.8	**0.79**	1.0	✓
neos-538916	6947.7	36.3	5593.1	**0.81**	27.9	**0.77**	7852.7	*1.13*	33.8	**0.93**	1.0	✓
neos-544324	13.5	39.5	72.6	*5.37*	39.7	1.00	15.3	*1.13*	27.8	**0.70**	0.3	✓
neos-547911	221.4	28.6	191.7	**0.87**	19.7	**0.69**	41.2	**0.19**	16.9	**0.59**	–	
neos-548047	13599.1	3600.0	24630.6	*1.81*	3600.0	1.00	15773.8	*1.16*	3600.0	1.00	0.3	✓
neos-548251	789491.1	3600.0	2042422.3	*2.59*	3600.0	1.00	568904.1	**0.72**	3600.0	1.00	1.7	✓

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	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	**nodes$_Q$**	**time**	**time$_Q$**	**nodes**	**nodes$_Q$**	**time**	**time$_Q$**	**nsols**	**impr.sols**
neos-551991	671.0	139.5	1793.7	*2.67*	220.4	*1.58*	609.1	**0.91**	131.9	**0.95**	–	
neos-555001	19.8	2.4	1.0	**0.05**	1.0	**0.40**	9.0	**0.46**	1.6	**0.64**	–	
neos-555298	639.3	65.0	2261.2	*3.54*	77.9	*1.20*	134.5	**0.21**	42.7	**0.66**	1.3	✓
neos-555343	315086.5	2328.1	276719.5	**0.88**	2421.1	1.04	273288.3	**0.87**	2198.4	**0.94**	1.0	✓
neos-555424	114209.2	1065.6	374022.3	*3.27*	3600.0	*3.38*	98479.8	**0.86**	1043.1	0.98	1.7	✓
neos-555694	16.9	9.0	16.2	0.96	5.1	**0.57**	1.7	**0.10**	2.4	**0.26**	0.7	✓
neos-555771	24.1	6.3	6.3	**0.26**	2.9	**0.45**	5.5	**0.23**	3.4	**0.53**	1.3	✓
neos-555884	252762.8	3600.0	359810.0	*1.42*	3600.0	1.00	235609.8	**0.93**	3600.0	1.00	1.3	✓
neos-555927	1115513.2	3600.0	1156971.4	1.04	3600.0	1.00	1141441.7	1.02	3600.0	1.00	3.3	✓
neos-565672	8.3	3486.6	6.0	**0.72**	3486.8	1.00	6.3	**0.76**	3522.9	1.01	1.3	✓
neos-565815	1.0	10.2	1.0	1.00	9.5	**0.93**	1.0	1.00	8.4	**0.82**	–	
neos-570431	257.1	9.7	326.3	*1.27*	10.5	*1.08*	276.7	*1.08*	10.4	*1.08*	0.3	✓
neos-574665	4377366.4	3600.0	4252382.8	0.97	3600.0	1.00	3708991.3	**0.85**	3600.0	1.00	1.0	✓
neos-578379	1.6	179.6	1.6	1.00	179.6	1.00	1.9	*1.18*	177.2	0.99	–	
neos-582605	501081.5	3600.0	607130.3	*1.21*	3600.0	1.00	443537.2	**0.89**	3600.0	1.00	–	
neos-583731	16.7	6.6	16.7	1.00	6.6	1.00	20.7	*1.24*	7.1	*1.07*	–	
neos-584146	858994.0	3600.0	966703.3	*1.12*	3600.0	1.00	1057800.0	*1.23*	3600.0	1.00	–	
neos-584851	8.9	6.9	6.9	**0.77**	7.1	1.03	7.8	**0.87**	7.3	*1.06*	0.3	✓
neos-584866	112403.3	3600.0	113208.1	1.01	3600.0	1.00	99188.6	**0.88**	3600.0	1.00	0.3	✓
neos-585192	749.0	21.2	737.4	0.98	20.9	0.99	785.0	1.05	20.1	**0.95**	0.7	✓
neos-585467	79.5	8.6	62.2	**0.78**	8.2	0.95	113.7	*1.43*	9.4	*1.09*	1.0	✓
neos-593853	28543.2	71.4	12670.0	**0.44**	31.6	**0.44**	57948.9	*2.03*	120.1	*1.68*	0.7	✓
neos-595904	2.7	16.2	3.6	*1.37*	15.3	**0.94**	3.3	*1.24*	17.7	*1.09*	0.3	✓
neos-595905	2.6	2.8	3.0	*1.13*	2.9	1.03	2.0	**0.76**	2.6	**0.91**	1.0	✓
neos-595925	27.6	11.4	252.6	*9.15*	16.1	*1.42*	27.6	1.00	12.8	*1.13*	0.3	✓
neos-598183	5.0	5.9	4.0	**0.80**	4.8	**0.82**	6.0	*1.21*	5.7	0.97	–	
neos-603073	231538.1	1099.6	81134.4	**0.35**	324.7	**0.29**	129468.2	**0.56**	479.2	**0.44**	1.3	✓
neos-611135	74338.8	3600.0	77543.2	1.04	3600.0	1.00	89741.7	*1.21*	3600.0	1.00	2.0	✓
neos-611838	713.9	19.1	670.9	**0.94**	15.9	**0.83**	668.3	**0.94**	18.4	0.97	4.0	
neos-612125	310.9	14.1	340.3	*1.09*	13.4	0.95	280.4	**0.90**	11.0	**0.78**	3.7	✓

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	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nsols**	**impr.sols**
neos-612143	702.0	17.5	726.5	1.03	15.6	**0.89**	602.0	**0.86**	17.8	1.01	3.7	✓
neos-612162	631.0	15.0	606.0	0.96	14.9	0.99	605.5	0.96	16.1	*1.07*	3.7	✓
neos-619167	65.7	3600.0	65.2	0.99	3600.0	1.00	37.9	**0.58**	3600.0	1.00	–	
neos-631164	188430.0	3600.0	449023.0	*2.38*	3600.0	1.00	117213.5	**0.62**	3600.0	1.00	13.0	✓
neos-631517	167948.0	3600.0	504179.0	*3.00*	3600.0	1.00	118475.0	**0.70**	3600.0	1.00	11.7	✓
neos-631694	541659.9	3600.0	161942.9	**0.30**	1696.0	**0.47**	12411.9	**0.02**	629.4	**0.17**	0.3	✓
neos-631709	763.3	3600.0	694.0	**0.91**	3600.0	1.00	369.7	**0.48**	3600.0	1.00	–	
neos-631710	1.0	3600.0	1.0	1.00	3600.0	1.00	1.0	1.00	3600.0	1.00	–	
neos-631784	177973.5	3600.0	18259.6	**0.10**	650.1	**0.18**	143580.3	**0.81**	2975.3	**0.83**	0.3	✓
neos-632335	193.0	10.4	193.0	1.00	10.4	1.00	193.0	1.00	10.4	1.00	–	
neos-633273	259.0	11.1	259.0	1.00	11.0	0.99	259.0	1.00	11.1	1.00	–	
neos-655508	1.0	1.4	1.0	1.00	1.4	1.01	1.0	1.00	1.4	1.01	–	
neos-662469	19081.9	3600.0	9208.4	**0.48**	1484.4	**0.41**	26618.9	*1.40*	3600.0	1.00	3.3	✓
neos-686190	7938.0	107.4	4368.0	**0.55**	72.2	**0.67**	7759.5	0.98	107.6	1.00	–	
neos-691058	3096.9	3600.0	3505.3	*1.13*	3600.0	1.00	2878.3	**0.93**	3600.0	1.00	1.0	✓
neos-691073	6801.0	3600.0	7842.4	*1.15*	3600.0	1.00	5827.3	**0.86**	3600.0	1.00	0.3	✓
neos-693347	19879.9	2418.9	14909.3	**0.75**	1811.6	**0.75**	15391.8	**0.77**	2426.3	1.00	0.7	✓
neos-702280	1031.5	3600.0	1228.0	*1.19*	3600.0	1.00	898.9	**0.87**	3600.0	1.00	9.0	
neos-709469	189.7	0.7	153.0	**0.81**	0.7	1.04	48.7	**0.26**	0.5	**0.78**	–	
neos-717614	8855.5	26.6	1414.6	**0.16**	7.4	**0.28**	4045.8	**0.46**	17.1	**0.64**	0.3	✓
neos-738098	396.1	3600.0	1052.4	*2.66*	3600.0	1.00	1011.9	*2.55*	3600.0	1.00	–	
neos-775946	4.5	8.0	13.4	*2.99*	8.9	*1.11*	2.7	**0.59**	6.7	**0.84**	1.7	✓
neos-780889	1.0	96.2	1.9	*1.92*	122.6	*1.27*	1.0	1.00	90.5	**0.94**	0.7	✓
neos-785899	28.3	2.3	32.1	*1.14*	3.0	*1.33*	15.5	**0.55**	4.1	*1.79*	–	
neos-785912	203.2	41.0	271.8	*1.34*	37.2	**0.91**	274.1	*1.35*	57.5	*1.40*	–	
neos-785914	13.0	8.3	23.8	*1.84*	9.4	*1.13*	12.6	0.97	7.8	**0.94**	–	
neos-787933	1.0	1.6	1.0	1.00	1.6	1.00	1.0	1.00	1.6	1.00	–	
neos-791021	36.1	367.7	195.0	*5.41*	648.1	*1.76*	35.6	0.99	343.1	**0.93**	1.0	✓
neos-796608	141.9	2.1	21041.2	*148.30*	61.8	*29.40*	2.7	**0.02**	0.5	**0.24**	0.7	✓
neos-799838	1.0	32.0	3.2	*3.20*	47.1	*1.47*	1.0	1.00	33.1	1.03	0.7	✓

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	default		nodiving				adaptivediving					
Instance	**nodes**	**time**	**nodes**	**nodes$_Q$**	**time**	**time$_Q$**	**nodes**	**nodes$_Q$**	**time**	**time$_Q$**	**nsols**	**impr.sols**
neos-801834	241.0	42.2	179.6	**0.74**	36.6	**0.86**	155.7	**0.65**	39.9	**0.94**	1.0	✓
neos-803219	12618.8	35.7	14849.1	*1.18*	34.6	0.97	12244.3	0.97	33.5	**0.94**	1.7	✓
neos-803220	44266.4	78.7	51057.4	*1.15*	80.2	1.02	42513.6	0.96	75.5	0.96	2.3	✓
neos-806323	7280.4	32.2	6827.6	**0.94**	30.2	**0.94**	7238.3	0.99	34.2	*1.06*	1.0	✓
neos-807454	1.0	2.0	1.0	1.00	2.0	0.99	1.0	1.00	2.0	0.99	–	
neos-807639	2506.2	15.9	3034.8	*1.21*	17.4	*1.10*	2528.7	1.01	15.9	1.00	1.3	✓
neos-807705	3331.6	26.8	5277.8	*1.58*	30.7	*1.15*	3326.6	1.00	27.5	1.02	3.7	✓
neos-808072	97.2	19.3	80.9	**0.83**	16.2	**0.84**	186.3	*1.92*	25.7	*1.33*	–	
neos-808214	1148.6	22.9	1546.0	*1.35*	24.6	*1.08*	795.5	**0.69**	18.8	**0.82**	–	
neos-810286	132.6	75.8	50.8	**0.38**	64.9	**0.86**	81.2	**0.61**	60.5	**0.80**	–	
neos-810326	823.9	39.8	513.1	**0.62**	28.8	**0.72**	1350.1	*1.64*	55.5	*1.39*	0.7	✓
neos-820146	1505505.0	3600.0	1554994.4	1.03	3600.0	1.00	1054142.6	**0.70**	3600.0	1.00	–	
neos-820157	1180763.2	3600.0	1343696.6	*1.14*	3600.0	1.00	1080849.3	**0.92**	3600.0	1.00	–	
neos-820879	256.1	52.8	396.4	*1.55*	48.3	**0.92**	178.4	**0.70**	66.5	*1.26*	0.7	✓
neos-824661	43.1	1298.1	212.3	*4.93*	1254.5	0.97	44.7	1.04	1243.0	0.96	–	
neos-824695	8.5	184.3	201.8	*23.85*	613.8	*3.33*	20.4	*2.42*	269.8	*1.46*	0.7	✓
neos-825075	4.4	1.9	3.8	**0.85**	1.8	**0.94**	1.7	**0.37**	1.7	**0.88**	0.7	✓
neos-826224	1.0	49.0	22.4	*22.45*	169.9	*3.46*	1.0	1.00	50.1	1.02	0.7	✓
neos-826250	7.1	137.9	13.5	*1.90*	127.5	**0.93**	1.3	**0.19**	80.9	**0.59**	0.3	✓
neos-826650	15642.6	3600.0	18816.8	*1.20*	3600.0	1.00	9255.5	**0.59**	3600.0	1.00	0.3	✓
neos-826694	6.5	174.5	39.3	*6.07*	272.9	*1.56*	1.0	**0.15**	102.5	**0.59**	–	
neos-826812	1.0	61.7	1.0	1.00	39.8	**0.65**	1.0	1.00	66.8	*1.08*	0.3	✓
neos-826841	82991.1	3600.0	77077.1	**0.93**	3600.0	1.00	71126.2	**0.86**	3600.0	1.00	0.7	✓
neos-827015	292.7	1138.5	269.8	**0.92**	932.6	**0.82**	291.3	0.99	1264.9	*1.11*	–	
neos-827175	1.0	12.1	1.0	1.00	9.1	**0.75**	1.0	1.00	12.3	1.01	0.7	✓
neos-829552	453.9	530.9	277.9	**0.61**	268.6	**0.51**	364.5	**0.80**	422.6	**0.80**	0.3	✓
neos-830439	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
neos-831188	2682.1	282.8	2837.9	*1.06*	262.7	**0.93**	2754.9	1.03	280.2	0.99	–	
neos-839838	23347.8	858.9	31126.9	*1.33*	1065.9	*1.24*	24314.9	1.04	873.0	1.02	1.3	✓
neos-839859	3254.8	47.7	2838.9	**0.87**	45.0	**0.94**	3342.6	1.03	51.3	*1.08*	0.3	✓

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	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nsols**	**impr.sols**
neos-839894	277.1	3600.0	283.8	1.02	3600.0	1.00	206.5	**0.74**	3600.0	1.00	–	
neos-841664	18450.7	3600.0	50623.4	*2.74*	3600.0	1.00	18012.5	0.98	3600.0	1.00	269.3	✓
neos-847302	154746.9	3600.0	104375.8	**0.67**	3600.0	1.00	195037.0	*1.26*	3600.0	1.00	1.7	✓
neos-848150	25.4	12.5	41.4	*1.63*	13.8	*1.10*	65.3	*2.57*	13.6	*1.08*	–	
neos-848198	616.7	3600.0	2026.1	*3.29*	3600.0	1.00	516.6	**0.84**	3600.0	1.00	184.3	✓
neos-848589	104.3	3600.0	167.4	*1.60*	3600.0	1.00	101.2	0.97	3600.0	1.00	0.3	✓
neos-848845	2587.4	155.0	12070.0	*4.67*	245.9	*1.59*	14142.9	*5.47*	283.7	*1.83*	–	
neos-849702	11836.6	268.5	6239.6	**0.53**	160.1	**0.60**	6346.0	**0.54**	175.8	**0.66**	–	
neos-850681	1.3	4.2	6.0	*4.53*	6.4	*1.53*	1.3	1.00	4.8	*1.14*	–	
neos-856059	190474.5	3117.3	210304.6	*1.10*	3389.9	*1.09*	72797.4	**0.38**	1405.9	**0.45**	9.0	✓
neos-859770	2.7	131.2	4.1	*1.50*	133.2	1.01	3.6	*1.34*	133.0	1.01	–	
neos-860244	1.3	4.5	1.0	**0.76**	4.3	**0.94**	1.0	**0.76**	4.3	**0.94**	–	
neos-860300	2.3	15.7	2.7	*1.14*	15.8	1.00	2.6	*1.13*	19.5	*1.24*	1.0	✓
neos-862348	86.7	9.3	87.0	1.00	9.1	0.98	38.8	**0.45**	9.9	*1.07*	1.0	✓
neos-863472	44960.0	48.0	38508.1	**0.86**	43.5	**0.91**	40379.5	**0.90**	43.8	**0.91**	–	
neos-872648	15.9	3600.0	19.9	*1.26*	3600.0	1.00	14.6	**0.92**	3600.0	1.00	5.3	✓
neos-873061	27.6	3600.0	36.2	*1.31*	3600.0	1.00	40.1	*1.45*	3600.0	1.00	13.0	
neos-876808	207.6	3600.0	459.8	*2.21*	3600.0	1.00	193.1	**0.93**	3600.0	1.00	0.7	✓
neos-880324	6.8	1.1	10.9	*1.61*	1.1	0.99	11.1	*1.65*	1.1	**0.94**	0.7	✓
neos-881765	17.9	2.0	17.9	1.00	2.0	0.99	55.8	*3.11*	2.4	*1.20*	–	
neos-885086	274.8	3600.0	315.0	*1.15*	3600.0	1.00	129.3	**0.47**	1717.3	**0.48**	–	
neos-885524	4585.4	3018.8	7955.3	*1.74*	1887.3	**0.62**	3002.9	**0.66**	1640.8	**0.54**	0.3	✓
neos-886822	178390.9	1976.9	116732.0	**0.65**	1470.8	**0.74**	177113.1	0.99	2174.5	*1.10*	0.3	✓
neos-892255	531.0	79.9	622.0	*1.17*	82.9	1.04	679.7	*1.28*	146.7	*1.83*	–	
neos-905856	11281.3	134.5	5478.6	**0.49**	83.9	**0.62**	9109.0	**0.81**	128.8	0.96	–	
neos-906865	16334.8	80.2	22002.9	*1.35*	116.4	*1.45*	18494.8	*1.13*	96.4	*1.20*	0.7	✓
neos-911880	1159496.9	1709.6	1733877.8	*1.50*	1959.2	*1.15*	2928989.1	*2.53*	3600.0	*2.11*	3.0	✓
neos-911970	3830083.0	3600.0	635148.8	**0.17**	1067.4	**0.30**	624932.8	**0.16**	938.3	**0.26**	1.0	✓
neos-912015	46.9	7.5	20.0	**0.43**	5.5	**0.73**	117.5	*2.50*	8.5	*1.13*	–	
neos-912023	9.1	5.8	10.8	*1.19*	6.0	1.03	84.2	*9.24*	8.9	*1.52*	–	

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	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nsols**	**impr.sols**
neos-913984	1.0	12.2	1.0	1.00	12.0	0.98	1.0	1.00	12.1	0.99	–	
neos-914441	1.0	5.0	1.0	1.00	5.0	1.00	1.7	*1.66*	6.6	*1.31*	1.3	✓
neos-916173	13027.5	102.8	15257.2	*1.17*	108.5	*1.06*	16772.0	*1.29*	120.0	*1.17*	0.3	✓
neos-916792	140610.8	1000.5	217878.2	*1.55*	1565.9	*1.56*	146682.8	1.04	1242.5	*1.24*	2.7	✓
neos-930752	864.2	3600.0	2417.9	*2.80*	3600.0	1.00	1327.7	*1.54*	3600.0	1.00	1.7	✓
neos-931517	874.7	3600.0	1237.9	*1.42*	3600.0	1.00	613.4	**0.70**	3600.0	1.00	1.3	✓
neos-931538	5.0	99.6	5.0	1.00	70.0	**0.70**	3.5	**0.70**	70.3	**0.71**	0.3	✓
neos-932721	18.3	22.1	19.5	*1.06*	18.8	**0.85**	2.2	**0.12**	12.2	**0.55**	–	
neos-932816	301.9	3600.0	673.4	*2.23*	3600.0	1.00	323.0	*1.07*	3600.0	1.00	2.0	✓
neos-933364	17038.6	47.4	19695.6	*1.16*	57.4	*1.21*	7555.2	**0.44**	28.9	**0.61**	1.0	✓
neos-933550	25.7	3.5	25.7	1.00	3.5	1.00	5.5	**0.21**	1.8	**0.53**	0.7	✓
neos-933562	20014.7	3600.0	36440.8	*1.82*	3600.0	1.00	17020.4	**0.85**	3600.0	1.00	1.7	✓
neos-933638	152.7	2862.4	477.2	*3.13*	3600.0	*1.26*	44.3	**0.29**	1752.6	**0.61**	–	
neos-933815	73373.1	89.8	32194.9	**0.44**	51.2	**0.57**	38306.8	**0.52**	92.9	1.03	1.3	✓
neos-933966	133.1	2105.2	1296.0	*9.73*	2295.3	*1.09*	158.7	*1.19*	1558.6	**0.74**	0.7	✓
neos-934278	220.7	3600.0	761.7	*3.45*	3600.0	1.00	244.1	*1.11*	3600.0	1.00	1.3	✓
neos-934441	189.7	3600.0	446.9	*2.36*	3600.0	1.00	239.5	*1.26*	3600.0	1.00	1.0	✓
neos-934531	3.6	111.2	4.0	*1.12*	82.5	**0.74**	6.5	*1.79*	94.5	**0.85**	–	
neos-935234	141.6	3600.0	285.8	*2.02*	3600.0	1.00	173.7	*1.23*	3600.0	1.00	1.3	✓
neos-935348	76.6	3600.0	576.9	*7.53*	3600.0	1.00	291.6	*3.81*	3600.0	1.00	1.0	✓
neos-935496	641435.5	3600.0	658733.2	1.03	3600.0	1.00	558638.0	**0.87**	3600.0	1.00	1.3	✓
neos-935627	368.2	3600.0	472.8	*1.28*	3600.0	1.00	429.6	*1.17*	3600.0	1.00	0.7	✓
neos-935674	610846.1	3600.0	661005.3	*1.08*	3600.0	1.00	459041.4	**0.75**	3600.0	1.00	1.7	✓
neos-935769	420.5	3600.0	1824.5	*4.34*	3600.0	1.00	273.7	**0.65**	3600.0	1.00	0.7	✓
neos-936660	511.2	3600.0	489.5	0.96	3600.0	1.00	317.0	**0.62**	3600.0	1.00	0.7	✓
neos-937446	38.8	1229.1	1107.6	*28.56*	3600.0	*2.93*	81.1	*2.09*	2483.1	*2.02*	–	
neos-937511	268.2	3324.2	1158.3	*4.32*	3600.0	*1.08*	158.3	**0.59**	2158.6	**0.65**	2.3	✓
neos-937815	390.6	3600.0	1750.0	*4.48*	3600.0	1.00	303.9	**0.78**	3600.0	1.00	2.0	✓
neos-941262	396.1	3600.0	813.1	*2.05*	3600.0	1.00	195.6	**0.49**	3600.0	1.00	1.7	✓
neos-941313	17.8	1731.1	18.8	*1.06*	1544.7	**0.89**	12.8	**0.72**	1554.0	**0.90**	–	

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Table 3: Computational results over three random seeds on MMMc test set comparing `SCIP` in its default configuration (`default`), without diving heuristics at all (`nodiving`), and extended by the new adaptive diving heuristics (`adaptivediving`). The table shows the absolute and relative numbers of nodes (**nodes**, **nodes**$_{\mathbf{Q}}$) and solving time (**time**, **time**$_{\mathbf{Q}}$). In addition, the average number of feasible solutions found by `adaptivediving` is shown (**nsols**). The right-most column (**impr.sols**) indicates whether at least one improving solution was found by `adaptivediving` with at least one seed (✓). Relative changes by at least 5% are highlighted in bold and blue (**improvement**) or italic and red (*deterioration*).

	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	**nodes**$_{\mathbf{Q}}$	**time**	**time**$_{\mathbf{Q}}$	**nodes**	**nodes**$_{\mathbf{Q}}$	**time**	**time**$_{\mathbf{Q}}$	**nsols**	**impr.sols**
neos-941698	174.4	13.2	167.0	0.96	12.9	0.98	42.9	**0.25**	7.3	**0.55**	–	
neos-941717	614427.9	3600.0	598685.0	0.97	3600.0	1.00	572084.3	**0.93**	3600.0	1.00	2.0	✓
neos-941782	817458.4	3600.0	694131.5	**0.85**	3600.0	1.00	704851.4	**0.86**	3600.0	1.00	1.3	✓
neos-942323	113.0	4.9	113.0	1.00	4.9	1.00	818.2	*7.24*	8.3	*1.69*	–	
neos-942830	324943.6	952.8	379201.9	*1.17*	1166.3	*1.22*	352690.1	*1.08*	974.1	1.02	0.3	✓
neos-942886	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
neos-948126	298.9	3600.0	557.0	*1.86*	3600.0	1.00	223.7	**0.75**	3600.0	1.00	1.3	✓
neos-948268	1.0	12.1	1.0	1.00	12.1	1.00	1.0	1.00	12.1	1.00	–	
neos-948346	17.5	3600.0	45.7	*2.60*	3600.0	1.00	47.8	*2.73*	3600.0	1.00	0.3	✓
neos-950242	27.9	173.9	25.5	**0.91**	158.0	**0.91**	123.6	*4.43*	425.6	*2.45*	1.0	✓
neos-952987	1.0	3600.0	1.0	1.00	3600.0	1.00	1.0	1.00	3600.0	1.00	–	
neos-953928	62.3	400.4	69.7	*1.12*	373.3	**0.93**	17.8	**0.29**	272.9	**0.68**	–	
neos-954925	105.7	2173.4	570.1	*5.39*	3600.0	*1.66*	45.8	**0.43**	1218.4	**0.56**	–	
neos-955215	17478.0	18.7	17898.2	1.02	20.6	*1.10*	14791.5	**0.85**	15.4	**0.83**	1.0	✓
neos-955800	1250.8	45.5	1698.1	*1.36*	49.9	*1.10*	779.0	**0.62**	40.4	**0.89**	1.3	✓
neos-956971	141.5	2392.5	450.7	*3.18*	3269.7	*1.37*	43.1	**0.30**	1311.3	**0.55**	0.3	✓
neos-957143	129.2	2127.4	2126.6	*16.46*	3600.0	*1.69*	22.8	**0.18**	349.6	**0.16**	0.7	✓
neos-957270	1.0	2.1	1.0	1.00	2.1	1.00	1.0	1.00	2.1	1.00	–	
neos-957323	2.8	101.0	6.3	*2.22*	93.9	**0.93**	5.8	*2.06*	134.1	*1.33*	0.7	✓
neos-957389	1.0	12.5	1.0	1.00	12.3	0.99	1.0	1.00	12.4	0.99	–	
neos-960392	29.1	662.3	90.8	*3.12*	777.2	*1.17*	25.9	**0.89**	613.6	**0.93**	0.3	✓
neos-983171	247.0	3600.0	807.1	*3.27*	3600.0	1.00	148.2	**0.60**	3600.0	1.00	–	
neos-984165	343.3	3600.0	504.4	*1.47*	3600.0	1.00	276.6	**0.81**	3600.0	1.00	1.3	✓
neos13	18381.8	380.0	187287.8	*10.19*	2655.1	*6.99*	15453.4	**0.84**	350.6	**0.92**	6.3	✓
neos18	1300.3	18.5	1222.5	**0.94**	21.8	*1.18*	948.2	**0.73**	17.8	0.96	0.3	✓
net12	2375.9	1177.0	2112.9	**0.89**	818.2	**0.69**	2130.4	**0.90**	749.4	**0.64**	0.3	✓
netdiversion	29.2	1128.7	139.8	*4.79*	3091.9	*2.74*	12.7	**0.43**	1045.3	**0.93**	0.7	✓
newdano	720667.7	3600.0	642235.4	**0.89**	3600.0	1.00	730835.1	1.01	3600.0	1.00	1.3	✓
noswot	366545.4	90.8	916511.3	*2.50*	218.9	*2.41*	504470.5	*1.38*	124.7	*1.37*	0.3	✓
ns1208400	857.8	256.0	932.8	*1.09*	288.2	*1.13*	1379.0	*1.61*	283.5	*1.11*	0.3	✓

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Table 3: Computational results over three random seeds on MMMc test set comparing `SCIP` in its default configuration (`default`), without diving heuristics at all (`nodiving`), and extended by the new adaptive diving heuristics (`adaptivediving`). The table shows the absolute and relative numbers of nodes (**nodes**, $\mathbf{nodes_Q}$) and solving time (**time**, $\mathbf{time_Q}$). In addition, the average number of feasible solutions found by `adaptivediving` is shown (**nsols**). The right-most column (**impr.sols**) indicates whether at least one improving solution was found by `adaptivediving` with at least one seed (✓). Relative changes by at least 5% are highlighted in bold and blue (**improvement**) or italic and red (*deterioration*).

	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	$\mathbf{nodes_Q}$	**time**	$\mathbf{time_Q}$	**nodes**	$\mathbf{nodes_Q}$	**time**	$\mathbf{time_Q}$	**nsols**	**impr.sols**
ns1688347	790.2	71.2	834.8	*1.06*	68.8	0.97	1134.9	*1.44*	70.5	0.99	0.3	✓
ns1758913	1.3	2064.0	1.3	1.00	2051.7	0.99	1.0	**0.76**	1759.4	**0.85**	0.7	✓
ns1766074	891795.1	564.9	892001.5	1.00	562.6	1.00	899371.1	1.01	583.0	1.03	–	
ns1830653	5199.4	110.0	7136.5	*1.37*	134.2	*1.22*	5233.1	1.01	117.9	*1.07*	1.0	✓
nsa	207.8	1.9	208.5	1.00	1.3	**0.71**	211.9	1.02	1.9	1.01	–	
nsrand-ipx	54359.1	496.3	97719.9	*1.80*	846.3	*1.71*	36269.2	**0.67**	318.8	**0.64**	0.3	✓
nug08	1.7	63.2	2.0	*1.19*	52.4	**0.83**	1.3	**0.80**	58.4	**0.93**	0.7	✓
nw04	6.3	24.2	5.3	**0.84**	21.9	**0.91**	5.3	**0.85**	23.8	0.98	0.7	✓
opm2-z7-s2	2179.1	243.8	2734.0	*1.25*	304.6	*1.25*	2343.2	*1.07*	233.2	0.96	1.0	✓
opt1217	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
p0033	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
p0201	12.7	0.8	9.5	**0.75**	0.5	**0.65**	8.1	**0.64**	0.7	**0.91**	0.7	✓
p0282	2.3	0.5	2.3	1.00	0.5	0.99	2.3	1.00	0.5	**0.94**	3.3	✓
p0548	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
p2756	13.2	3.3	11.0	**0.84**	2.5	**0.78**	5.1	**0.39**	3.0	**0.92**	1.3	✓
p6b	323294.8	3600.0	219821.9	**0.68**	3600.0	1.00	304344.2	**0.94**	3600.0	1.00	43.0	✓
pg	393.2	17.4	322.1	**0.82**	13.6	**0.78**	346.9	**0.88**	16.0	**0.92**	1.3	✓
pg5_34	205199.5	2352.5	242974.3	*1.18*	2456.6	1.04	193454.2	**0.94**	2203.8	**0.94**	1.3	✓
pigeon-10	4019215.8	1619.4	11611815.7	*2.89*	3600.0	*2.22*	8387118.0	*2.09*	3046.2	*1.88*	0.3	✓
pk1	334752.2	105.4	370026.6	*1.10*	110.2	1.05	307638.2	**0.92**	99.4	**0.94**	2.3	✓
pp08a	207.8	1.4	200.2	0.96	1.4	0.99	212.1	1.02	1.5	*1.05*	10.3	✓
pp08aCUTS	122.2	1.8	133.7	*1.09*	1.9	*1.09*	118.3	0.97	1.9	1.04	9.0	✓
prod1	26945.2	18.2	47322.8	*1.76*	27.6	*1.52*	43144.3	*1.60*	29.5	*1.62*	2.3	✓
prod2	98039.7	104.4	122168.5	*1.25*	120.3	*1.15*	110835.1	*1.13*	111.4	*1.07*	9.3	
protfold	5453.4	3600.0	6804.1	*1.25*	3600.0	1.00	4773.2	**0.88**	3600.0	1.00	0.3	✓
pw-myciel4	299777.0	2220.1	162153.8	**0.54**	1018.3	**0.46**	266983.7	**0.89**	1849.0	**0.83**	1.0	✓
qap10	5.7	152.3	3.3	**0.57**	87.9	**0.58**	1.7	**0.29**	119.4	**0.78**	0.7	✓
qiu	2580.1	24.2	2512.8	0.97	20.9	**0.86**	3918.7	*1.52*	28.1	*1.16*	8.3	✓
qnet1	15.7	3.7	9.7	**0.62**	3.8	1.03	2.6	**0.17**	1.5	**0.40**	5.7	✓
qnet1_o	2.0	1.8	5.1	*2.54*	1.8	0.98	2.3	*1.16*	2.2	*1.23*	1.0	✓

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Table 3: Computational results over three random seeds on MMMc test set comparing `SCIP` in its default configuration (`default`), without diving heuristics at all (`nodiving`), and extended by the new adaptive diving heuristics (`adaptivediving`). The table shows the absolute and relative numbers of nodes (**nodes**, **nodes$_\mathbf{Q}$**) and solving time (**time**, **time$_\mathbf{Q}$**). In addition, the average number of feasible solutions found by `adaptivediving` is shown (**nsols**). The right-most column (**impr.sols**) indicates whether at least one improving solution was found by `adaptivediving` with at least one seed (✓). Relative changes by at least 5% are highlighted in bold and blue (**improvement**) or italic and red (*deterioration*).

	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nodes**	**nodes$_\mathbf{Q}$**	**time**	**time$_\mathbf{Q}$**	**nsols**	**impr.sols**
rail507	745.7	162.6	929.4	*1.25*	184.0	*1.13*	821.0	*1.10*	200.2	*1.23*	0.7	✓
ramos3	16.6	3600.0	17.0	1.02	3600.0	1.00	13.0	**0.78**	3600.0	1.00	5.7	
ran14x18.disj-8	461955.8	1440.7	426190.1	**0.92**	1415.7	0.98	411637.7	**0.89**	1294.1	**0.90**	108.3	✓
ran14x18_1	421575.1	1181.0	379931.0	**0.90**	986.3	**0.83**	417531.0	0.99	1058.7	**0.90**	129.3	
ran16x16	14207.2	77.6	9971.7	**0.70**	72.7	**0.94**	10089.0	**0.71**	73.4	**0.94**	63.7	✓
rd-rplusc-21	258853.1	3600.0	277132.2	*1.07*	3600.0	1.00	222275.4	**0.86**	3600.0	1.00	0.7	✓
reblock67	65100.0	258.7	47291.3	**0.73**	193.9	**0.75**	49203.0	**0.76**	195.4	**0.76**	1.3	✓
rentacar	6.0	2.2	6.0	1.00	2.1	0.99	5.3	**0.88**	2.2	1.02	1.3	✓
rgn	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	1.0	✓
rlp1	15702666.0	3600.0	16847612.6	*1.07*	3600.0	1.00	17579882.1	*1.12*	3600.0	1.00	–	
rmatr100-p10	818.4	166.4	835.2	1.02	149.1	**0.90**	806.9	0.99	162.3	0.97	2.3	✓
rmatr100-p5	507.7	279.8	473.1	**0.93**	241.0	**0.86**	473.6	**0.93**	285.9	1.02	1.0	✓
rmine6	94404.0	840.9	92116.0	0.98	827.8	0.98	87820.6	**0.93**	784.0	**0.93**	0.7	✓
rococoC10-001000	61788.9	747.1	66303.8	*1.07*	985.3	*1.32*	70980.9	*1.15*	892.1	*1.19*	1.3	✓
roll3000	2515.8	51.3	2254.4	**0.90**	45.5	**0.89**	3042.7	*1.21*	59.2	*1.15*	0.7	✓
rout	24846.1	82.1	13458.6	**0.54**	58.8	**0.72**	18795.8	**0.76**	67.5	**0.82**	2.7	✓
roy	1.3	0.5	1.3	1.00	0.5	1.00	1.0	**0.76**	0.5	1.00	0.3	✓
satellites1-25	225.6	892.7	483.1	*2.14*	674.2	**0.76**	105.2	**0.47**	684.3	**0.77**	1.0	✓
set1ch	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
seymour	112578.7	3600.0	95622.5	**0.85**	3600.0	1.00	115834.4	1.03	3600.0	1.00	17.7	✓
seymour.disj-10	42724.0	3600.0	38954.1	**0.91**	3600.0	1.00	40519.8	**0.95**	3600.0	1.00	23.0	✓
sp97ar	11008.0	3600.0	10240.6	**0.93**	3600.0	1.00	7795.1	**0.71**	3600.0	1.00	–	
sp97ic	17051.6	3600.0	19037.2	*1.12*	3600.0	1.00	23161.4	*1.36*	3600.0	1.00	0.3	✓
sp98ar	1627.8	3600.0	1825.6	*1.12*	3600.0	1.00	1596.4	0.98	3600.0	1.00	0.3	✓
sp98ic	29695.4	3600.0	31775.9	*1.07*	3600.0	1.00	31181.3	*1.05*	3600.0	1.00	0.3	✓
sp98ir	5204.9	77.1	4859.2	**0.93**	67.9	**0.88**	4388.9	**0.84**	62.9	**0.82**	1.0	✓
stein27	1273.1	0.6	984.7	**0.77**	0.6	**0.90**	1310.8	1.03	0.7	*1.06*	3.0	
stein45	40030.3	12.7	44536.0	*1.11*	12.4	0.98	40029.2	1.00	12.4	0.98	3.3	
stp3d	1.0	3600.0	5.9	*5.92*	3600.0	1.00	1.0	1.00	3600.0	1.00	–	
swath	335083.3	3600.0	407024.3	*1.22*	3600.0	1.00	300096.1	**0.90**	3600.0	1.00	0.3	✓

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Table 3: Computational results over three random seeds on MMMc test set comparing `SCIP` in its default configuration (`default`), without diving heuristics at all (`nodiving`), and extended by the new adaptive diving heuristics (`adaptivediving`). The table shows the absolute and relative numbers of nodes (**nodes**, $\mathbf{nodes_Q}$) and solving time (**time**, $\mathbf{time_Q}$). In addition, the average number of feasible solutions found by `adaptivediving` is shown (**nsols**). The right-most column (**impr.sols**) indicates whether at least one improving solution was found by `adaptivediving` with at least one seed (✓). Relative changes by at least 5% are highlighted in bold and blue (**improvement**) or italic and red (*deterioration*).

	`default`		`nodiving`				`adaptivediving`					
Instance	**nodes**	**time**	**nodes**	$\mathbf{nodes_Q}$	**time**	$\mathbf{time_Q}$	**nodes**	$\mathbf{nodes_Q}$	**time**	$\mathbf{time_Q}$	**nsols**	**impr.sols**
t1717	2003.0	3600.0	2313.9	*1.16*	3600.0	1.00	1277.3	**0.64**	3600.0	1.00	2.3	✓
tanglegram1	34.7	400.0	60.1	*1.73*	490.5	*1.23*	42.6	*1.23*	452.6	*1.13*	–	
tanglegram2	4.2	6.8	3.0	**0.71**	5.2	**0.77**	4.2	1.00	6.3	**0.93**	0.3	✓
timtab1	47140.5	55.1	30422.2	**0.65**	42.0	**0.76**	49461.7	1.05	56.3	1.02	4.0	✓
timtab2	1764544.1	3600.0	1688186.0	0.96	3600.0	1.00	1741605.1	0.99	3600.0	1.00	1.0	✓
tr12-30	384457.8	618.9	387094.5	1.01	603.7	0.97	390286.7	1.01	655.6	*1.06*	2.0	✓
triptim1	1.7	456.9	8.5	*5.13*	824.5	*1.80*	1.7	1.00	511.3	*1.12*	1.0	✓
unitcal_7	81.1	280.0	185.9	*2.29*	285.2	1.02	69.1	**0.85**	262.0	**0.94**	1.7	✓
vpm1	1.0	0.5	1.0	1.00	0.5	1.00	1.0	1.00	0.5	1.00	–	
vpm2	249.4	1.9	240.6	0.96	1.8	**0.93**	239.1	0.96	2.0	1.03	1.0	✓
vpphard	1079.3	3600.0	2446.2	*2.27*	3600.0	1.00	1294.4	*1.20*	3600.0	1.00	2.3	✓
zib54-UUE	87933.1	1734.3	76307.0	**0.87**	1363.8	**0.79**	62251.4	**0.71**	1382.7	**0.80**	43.0	✓
geom.	870.56	131.06	1066.52	1.23	132.64	1.01	763.29	0.88	125.22	0.96		
shgeom. (100/1)	2532.32	150.82	2901.74	1.15	152.81	1.01	2375.66	0.94	144.57	0.96		

Table 4: LP pricing results for every tested instance, seed, and pricing method from the experiment in Section 3.1. We use the following abbreviations for the pricing methods (column P): d(evex), q(steep), s(teep), g(reedy), u(UCB), w(eighted). The table shows a total of 105 instances from the MMMc test set, which were selected from the entire list of instances with the bash command `shuf`.

		time				LPthpt			
Instance	P	0	1	2	3	0	1	2	3
a1c1s1	d	900.0	900.0	900.0	900.0	42.574	43.040	41.563	40.135
	q	900.0	900.0	900.0	900.0	29.670	24.446	34.993	33.850
	s	900.0	900.0	900.0	900.0	37.213	36.888	36.613	36.993
	g	900.0	900.0	900.0	900.0	43.522	40.259	40.331	39.291
	u	900.0	900.0	900.0	900.0	41.359	31.043	51.633	45.428
	w	900.0	900.0	900.0	900.0	31.718	29.091	29.812	31.108
aflow30a	d	18.6	18.5	18.6	18.6	1244.000	1203.871	1144.785	1097.647
	q	21.9	30.1	30.6	25.8	753.696	525.260	587.282	578.873
	s	17.9	17.8	17.9	17.9	749.794	737.652	737.652	743.673
	g	17.7	18.9	19.7	18.1	1062.092	984.153	971.429	1063.514
	u	22.1	22.6	19.4	19.6	1100.000	980.095	972.340	1000.546
	w	19.2	18.8	19.3	19.2	967.337	902.604	988.462	988.462
app1-2	d	572.9	544.2	561.9	616.5	4.924	4.456	5.420	6.166
	q	900.0	900.0	900.0	900.0	1.269	1.228	4.278	4.655
	s	900.0	900.0	900.0	900.0	1.129	1.131	1.128	1.118
	g	735.7	585.5	526.9	568.9	5.902	4.674	4.229	4.663
	u	595.5	677.6	657.4	584.6	4.020	4.827	6.220	4.297
	w	705.8	651.0	602.2	631.2	5.293	4.607	3.987	4.183
bienst2	d	443.8	544.9	518.4	494.3	194.759	181.017	169.368	175.427
	q	900.0	900.0	900.0	900.0	56.873	37.016	40.996	40.979
	s	757.1	783.2	769.5	768.0	117.247	107.874	96.940	95.447
	g	472.5	557.4	627.0	530.3	189.471	183.868	158.378	170.847
	u	489.1	619.8	576.2	475.5	171.459	172.262	162.833	165.103
	w	508.0	717.4	656.4	858.1	130.264	136.877	119.819	128.774
core2536-691	d	237.8	208.3	134.8	493.0	3.357	1.312	0.434	2.729
	q	238.9	644.7	152.5	222.9	5.058	4.654	5.720	5.577
	s	115.8	88.8	195.2	436.7	10.571	6.546	4.075	9.569
	g	110.9	351.7	128.8	172.5	5.850	6.261	7.453	5.911
	u	388.7	253.3	379.8	112.0	3.427	6.705	2.127	6.726
	w	474.8	148.6	447.7	148.4	3.551	5.340	2.782	8.850
csched010	d	900.0	900.0	900.0	900.0	254.254	266.977	267.753	279.667
	q	900.0	900.0	900.0	900.0	177.648	206.084	200.400	188.400
	s	900.0	900.0	900.0	900.0	260.993	270.149	265.517	274.868
	g	900.0	900.0	900.0	900.0	271.277	287.984	246.270	297.205
	u	900.0	900.0	900.0	900.0	265.855	255.365	263.803	269.094
	w	900.0	900.0	900.0	900.0	247.492	245.468	247.870	239.830
d20200	d	900.0	900.0	900.0	900.0	55.414	80.737	65.443	80.534
	q	900.0	900.0	900.0	900.0	24.929	81.643	22.110	23.427
	s	900.0	900.0	900.0	900.0	33.338	32.400	30.440	33.428
	g	900.0	900.0	900.0	900.0	74.107	67.907	28.248	50.438
	u	900.0	900.0	900.0	900.0	62.490	22.219	22.000	17.345
	w	900.0	900.0	900.0	900.0	21.374	69.536	23.036	23.113
dano3_3	d	575.3	641.8	600.5	529.5	0.063	0.060	0.067	0.065
	q	208.6	169.7	182.0	191.5	0.396	0.265	0.422	0.401
	s	109.6	108.5	95.6	116.3	1.762	1.139	2.335	1.547
	g	136.0	116.2	131.7	131.9	0.771	1.109	0.924	0.842
	u	145.4	113.0	126.7	137.0	0.726	1.010	1.180	1.018
	w	136.7	119.8	135.8	127.6	0.855	1.130	0.870	0.875
dano3_5	d	804.6	629.2	694.2	866.1	0.307	0.674	0.344	0.283
	q	445.9	504.2	900.0	683.1	0.782	0.781	0.814	0.765
	s	239.7	213.0	273.7	256.6	4.299	3.247	2.857	4.265
	g	277.7	293.7	286.0	320.1	2.686	2.488	2.632	2.229
	u	337.4	327.8	305.1	277.5	2.527	2.795	2.663	2.560
	w	304.5	282.8	302.1	276.4	2.329	2.699	2.782	2.751
enigma	d	0.5	0.5	0.5	0.5	781.000	631.000	518.000	477.000
	q	0.5	0.5	0.5	0.5	790.000	119.000	817.000	752.000
	s	0.5	0.5	0.5	0.5	434.000	662.000	662.000	434.000
	g	0.5	0.5	0.5	0.5	781.000	631.000	518.000	477.000
	u	0.5	0.5	0.5	0.5	612.000	902.000	219.000	580.000
	w	0.5	0.5	0.5	0.5	781.000	631.000	518.000	477.000
enlight14	d	0.5	0.5	0.5	0.5	1.000	1.000	1.000	1.000

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Table 4: LP pricing results for every tested instance, seed, and pricing method from the experiment in Section 3.1.

		time				**LPthpt**			
Instance	P	0	1	2	3	0	1	2	3
	q	0.5	0.5	0.5	0.5	1.000	1.000	1.000	1.000
	s	0.5	0.5	0.5	0.5	1.000	1.000	1.000	1.000
	g	0.5	0.5	0.5	0.5	1.000	1.000	1.000	1.000
	u	0.5	0.5	0.5	0.5	1.000	1.000	1.000	1.000
	w	0.5	0.5	0.5	0.5	1.000	1.000	1.000	1.000
fast0507	d	198.3	225.6	184.6	225.6	22.817	21.862	17.956	20.936
	q	243.7	168.8	168.7	160.6	28.509	30.203	29.215	32.737
	s	122.6	152.4	148.7	144.7	54.444	53.600	55.053	53.027
	g	123.3	103.4	94.7	122.3	51.129	51.579	50.349	46.272
	u	164.5	118.6	135.5	146.7	42.083	37.173	38.802	40.951
	w	201.1	125.4	215.2	136.0	28.425	35.840	29.073	33.544
gesa3	d	4.0	4.0	4.0	4.0	132.000	132.000	132.000	132.000
	q	3.1	3.1	3.1	3.1	114.000	114.000	114.000	114.000
	s	2.5	2.6	2.6	2.6	133.000	133.000	133.000	133.000
	g	4.0	4.1	4.0	4.0	132.000	132.000	132.000	132.000
	u	4.0	4.0	4.0	4.1	132.000	132.000	132.000	132.000
	w	4.0	4.0	4.0	4.0	132.000	132.000	132.000	132.000
gmu-35-40	d	900.0	900.0	900.0	900.0	4957.472	5117.238	4973.098	4855.290
	q	900.0	900.0	900.0	900.0	4396.990	4325.870	4692.965	4336.761
	s	900.0	900.0	900.0	900.0	1792.424	1820.965	1782.291	1808.548
	g	900.0	900.0	900.0	900.0	4851.232	5191.881	4967.683	4735.952
	u	900.0	900.0	900.0	900.0	5234.216	4843.152	4735.445	4890.141
	w	900.0	900.0	900.0	900.0	4871.580	4980.356	4803.680	4876.100
khb05250	d	0.5	0.5	0.5	0.5	43.000	43.000	43.000	43.000
	q	0.5	0.5	0.5	0.5	39.000	39.000	39.000	39.000
	s	0.5	0.5	0.5	0.5	35.000	35.000	35.000	35.000
	g	0.5	0.5	0.5	0.5	43.000	43.000	43.000	43.000
	u	0.5	0.5	0.5	0.5	43.000	43.000	43.000	43.000
	w	0.5	0.5	0.5	0.5	43.000	43.000	43.000	43.000
lectsched-4-obj	d	34.1	23.5	21.5	41.3	445.055	567.368	429.545	604.450
	q	29.6	11.6	13.4	14.6	332.069	20.000	19.375	20.000
	s	36.6	35.5	22.0	72.3	354.664	359.259	257.471	81.163
	g	27.7	27.2	24.4	35.3	342.174	599.228	474.771	531.845
	u	47.3	8.0	20.3	31.4	445.113	23.000	445.185	443.388
	w	60.7	21.1	32.9	12.6	215.534	480.303	471.512	21.000
m100n500k4r1	d	900.0	900.0	900.0	900.0	1354.100	1476.484	1418.780	1423.688
	q	900.0	900.0	900.0	900.0	1033.038	1052.989	1006.777	992.487
	s	900.0	900.0	900.0	900.0	971.066	962.994	993.292	972.630
	g	900.0	900.0	900.0	900.0	1415.771	1444.667	1407.778	1371.903
	u	900.0	900.0	900.0	900.0	1439.498	1444.715	1458.356	1449.160
	w	900.0	900.0	900.0	900.0	1109.017	1181.933	1129.757	1160.798
macrophage	d	200.6	200.5	200.2	200.5	173.980	173.303	174.541	174.321
	q	332.8	331.7	332.0	332.5	57.818	58.348	57.979	58.052
	s	246.8	247.1	246.4	247.4	94.651	95.915	94.975	95.105
	g	170.2	204.1	235.0	286.0	162.862	175.251	163.018	180.481
	u	251.4	199.6	245.6	206.4	165.063	188.914	163.635	113.993
	w	329.0	320.1	298.6	309.6	121.521	140.335	144.938	147.225
misc07	d	13.7	14.2	14.2	14.6	4479.765	4244.744	4155.145	4210.818
	q	15.1	14.4	13.9	15.0	3415.000	3812.658	3702.278	3511.751
	s	10.8	10.7	10.7	10.8	1678.019	1706.875	1650.151	1709.779
	g	13.9	14.2	8.0	14.1	3901.351	3847.135	4240.268	4295.280
	u	10.3	11.1	10.5	8.0	4095.312	3895.139	4101.901	4048.214
	w	14.4	12.8	12.7	14.7	4393.036	4118.452	4478.317	3919.638
mkc	d	900.0	900.0	900.0	900.0	820.557	672.545	474.280	320.387
	q	900.0	900.0	900.0	900.0	513.883	235.949	415.825	505.398
	s	900.0	900.0	900.0	900.0	163.630	139.575	198.332	141.679
	g	900.0	900.0	900.0	900.0	368.789	812.473	494.223	256.341
	u	900.0	900.0	900.0	900.0	646.885	458.266	585.384	309.882
	w	900.0	900.0	900.0	900.0	383.976	415.484	456.326	348.011
mod008	d	0.5	0.5	0.5	0.5	79.000	79.000	79.000	79.000
	q	0.5	0.5	0.5	0.5	61.000	61.000	61.000	61.000
	s	0.5	0.5	0.5	0.5	87.000	87.000	87.000	87.000
	g	0.5	0.5	0.5	0.5	79.000	79.000	79.000	79.000
	u	0.5	0.5	0.5	0.5	79.000	79.000	79.000	79.000
	w	0.5	0.5	0.5	0.5	79.000	79.000	79.000	79.000

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Table 4: LP pricing results for every tested instance, seed, and pricing method from the experiment in Section 3.1.

		time				LPthpt			
		0	1	2	3	0	1	2	3
Instance	P								
mspp16	d	358.7	381.1	350.6	504.0	3.700	3.558	3.724	3.611
	q	432.6	471.4	631.3	542.7	3.339	3.128	3.083	3.079
	s	591.9	585.4	478.5	438.5	2.712	2.694	2.602	2.956
	g	356.4	379.5	352.6	502.6	3.591	3.551	3.466	3.619
	u	373.4	389.8	353.4	507.9	3.353	3.339	3.367	3.165
	w	358.6	380.6	350.8	497.5	3.433	3.571	3.556	3.493
n4-3	d	262.3	181.0	198.4	186.1	70.188	73.857	75.043	67.679
	q	204.1	296.3	296.4	271.8	55.096	42.721	42.514	46.260
	s	258.1	256.3	264.1	281.6	62.316	62.988	63.958	65.060
	g	292.3	207.6	232.7	206.9	60.031	60.679	59.695	71.321
	u	198.4	165.4	201.6	217.6	68.387	70.147	65.514	60.673
	w	186.6	180.6	170.6	187.1	68.040	64.525	67.900	66.602
nag	d	900.0	900.0	900.0	900.0	8.997	19.244	9.468	13.188
	q	900.0	900.0	900.0	900.0	20.089	30.552	20.142	22.371
	s	900.0	900.0	900.0	900.0	17.787	25.765	24.584	20.800
	g	900.0	900.0	900.0	900.0	9.821	27.463	24.979	28.266
	u	900.0	900.0	900.0	900.0	18.922	24.049	27.673	31.339
	w	900.0	900.0	900.0	900.0	12.912	20.503	22.031	18.800
neos-1109824	d	11.4	11.4	11.4	11.3	327.000	327.000	327.000	330.000
	q	53.2	21.3	14.6	28.7	418.059	480.952	449.000	521.008
	s	22.7	22.6	22.6	22.3	412.376	420.283	429.381	428.365
	g	11.4	11.4	11.4	11.4	327.000	327.000	327.000	330.000
	u	14.6	11.7	16.2	14.5	566.000	415.000	558.000	459.000
	w	11.4	11.4	11.4	11.4	327.000	327.000	327.000	330.000
neos-1121679	d	900.0	900.0	900.0	900.0	40503.819	43426.849	44849.477	47961.462
	q	900.0	900.0	900.0	900.0	48650.960	47732.673	43624.325	45397.926
	s	900.0	900.0	900.0	900.0	35063.374	32543.903	35453.998	32472.430
	g	900.0	900.0	900.0	900.0	40640.170	42960.902	43832.496	47500.216
	u	900.0	900.0	900.0	900.0	41015.926	40756.995	48113.837	46944.355
	w	900.0	900.0	900.0	900.0	41004.903	43732.617	44336.416	47854.721
neos-1200887	d	8.0	12.5	9.3	13.1	2102.030	2045.566	1935.545	1876.061
	q	26.4	13.6	17.0	13.3	658.871	647.135	639.187	589.316
	s	15.8	10.4	15.9	17.2	1000.460	885.678	995.398	942.756
	g	7.2	11.4	13.0	11.5	2018.889	1901.286	2133.618	2024.335
	u	9.3	9.6	15.8	20.1	2135.784	1847.525	2130.512	1158.499
	w	9.0	14.7	14.1	21.4	1373.050	1450.797	1824.045	1246.951
neos-1208135	d	316.7	112.8	219.0	280.4	29.622	18.307	11.232	14.378
	q	181.6	306.8	153.5	314.5	41.041	51.928	51.888	33.805
	s	96.2	140.9	62.8	110.1	105.838	97.942	68.750	90.397
	g	199.3	168.8	169.0	137.7	50.594	31.172	16.549	97.741
	u	427.1	189.8	406.4	128.1	25.878	38.418	27.066	39.249
	w	128.4	96.3	203.0	288.9	73.620	92.787	28.902	45.782
neos-1211578	d	5.8	5.8	5.8	5.8	10504.348	10778.947	10343.885	9511.842
	q	3.5	3.5	3.5	3.6	4180.000	4570.000	4290.000	4607.000
	s	4.3	3.8	2.2	2.1	4696.324	4202.439	2967.000	2967.000
	g	4.6	4.5	4.6	4.6	7712.821	8355.556	8057.143	7712.821
	u	5.3	5.1	4.9	5.1	8441.007	7005.442	7717.857	8954.074
	w	5.2	5.3	5.6	5.1	8783.846	8494.964	8611.111	7950.694
neos-1215259	d	34.4	87.1	45.1	81.9	175.796	234.231	149.868	209.923
	q	74.7	68.6	86.3	93.1	125.655	130.243	115.306	144.237
	s	60.3	56.6	44.3	73.1	109.423	123.399	111.594	104.384
	g	52.5	104.6	80.1	74.5	135.493	116.500	210.729	148.120
	u	55.2	47.4	145.8	40.5	138.149	174.620	193.459	153.507
	w	35.9	43.1	75.2	54.9	152.980	131.443	158.954	136.264
neos-1346382	d	900.0	900.0	900.0	900.0	4806.782	5129.140	5018.683	4413.842
	q	900.0	900.0	900.0	900.0	2575.227	2640.614	2640.565	2236.559
	s	900.0	900.0	900.0	900.0	2973.421	2813.680	2612.887	2889.603
	g	900.0	900.0	900.0	900.0	4350.394	4305.212	4764.726	5081.017
	u	900.0	900.0	900.0	900.0	4605.106	5281.544	4336.167	5169.299
	w	900.0	900.0	900.0	900.0	4590.540	4645.492	4789.903	4696.517
neos-1354092	d	900.0	900.0	900.0	900.0	0.010	0.037	0.016	0.020
	q	900.0	900.0	900.0	900.0	0.013	0.035	0.019	0.021
	s	900.0	900.0	900.0	900.0	0.040	0.086	0.031	0.055
	g	900.0	900.0	900.0	900.0	0.008	0.044	0.019	0.079
	u	900.0	900.0	900.0	900.0	0.008	0.018	0.020	0.021

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Table 4: LP pricing results for every tested instance, seed, and pricing method from the experiment in Section 3.1.

		time				LPthpt			
		0	1	2	3	0	1	2	3
Instance	P								
	w	900.0	900.0	900.0	900.0	0.008	0.043	0.019	0.014
neos-1396125	d	81.2	112.8	156.7	111.2	479.124	287.480	114.974	313.672
	q	214.9	436.5	313.3	256.6	105.252	101.866	165.177	125.753
	s	213.3	385.7	232.5	133.4	125.778	130.756	212.115	189.280
	g	75.1	63.3	99.8	88.2	763.894	482.770	308.508	569.730
	u	84.6	58.7	189.9	211.2	405.363	530.539	164.979	102.820
	w	132.0	229.8	182.2	102.1	196.664	102.792	198.023	394.209
neos-1423785	d	900.0	900.0	900.0	900.0	28.021	25.730	32.952	38.685
	q	900.0	900.0	900.0	900.0	23.588	29.395	45.820	40.289
	s	900.0	900.0	900.0	900.0	62.108	29.868	23.307	34.735
	g	900.0	900.0	900.0	900.0	27.500	26.432	29.703	15.431
	u	900.0	900.0	900.0	900.0	40.039	34.041	37.078	20.928
	w	900.0	900.0	900.0	900.0	27.193	26.114	29.775	12.988
neos-1426662	d	900.0	900.0	900.0	900.0	2070.145	1777.964	1590.222	2016.281
	q	900.0	900.0	900.0	900.0	833.052	598.923	728.032	859.918
	s	900.0	900.0	900.0	900.0	922.483	541.844	659.671	1069.955
	g	900.0	900.0	900.0	900.0	1999.173	1705.709	1733.105	1891.412
	u	900.0	900.0	900.0	900.0	1803.051	1851.213	1778.505	1784.021
	w	900.0	900.0	900.0	900.0	1021.541	1796.783	1495.989	1772.495
neos-1427261	d	900.0	900.0	900.0	900.0	282.888	355.196	382.616	424.627
	q	900.0	900.0	900.0	900.0	291.592	284.075	203.952	394.548
	s	900.0	900.0	900.0	900.0	204.745	264.489	247.766	251.151
	g	900.0	900.0	900.0	900.0	399.492	270.395	346.659	304.449
	u	900.0	900.0	900.0	900.0	392.847	341.320	381.315	413.005
	w	900.0	900.0	900.0	900.0	198.909	304.426	264.728	247.440
neos-1437164	d	0.5	0.5	0.5	0.5	1.000	1.000	1.000	1.000
	q	0.5	0.5	0.5	0.5	1.000	1.000	1.000	1.000
	s	0.5	0.5	0.5	0.5	1.000	1.000	1.000	1.000
	g	0.5	0.5	0.5	0.5	1.000	1.000	1.000	1.000
	u	0.5	0.5	0.5	0.5	1.000	1.000	1.000	1.000
	w	0.5	0.5	0.5	0.5	1.000	1.000	1.000	1.000
neos-1440460	d	900.0	900.0	900.0	900.0	2355.926	2292.097	2412.208	3358.013
	q	900.0	900.0	900.0	900.0	670.297	599.011	721.037	657.970
	s	900.0	900.0	900.0	900.0	972.577	907.709	996.631	1051.829
	g	900.0	900.0	900.0	900.0	2255.526	2423.529	2259.589	2303.630
	u	900.0	900.0	900.0	900.0	2235.554	2405.995	2372.504	2244.451
	w	900.0	900.0	900.0	900.0	1291.701	1949.901	2657.026	2589.547
neos-1441553	d	4.0	3.4	1.6	2.7	60.000	44.000	13.000	59.000
	q	2.6	2.4	2.0	2.6	31.000	29.000	14.000	29.000
	s	1.8	1.9	2.0	1.8	13.000	13.000	13.000	13.000
	g	4.0	3.4	1.6	2.6	60.000	44.000	13.000	72.000
	u	3.9	3.4	1.6	2.6	63.000	44.000	13.000	62.000
	w	4.0	3.4	1.6	2.6	63.000	44.000	13.000	72.000
neos-1445755	d	56.8	56.3	56.3	56.3	65.466	65.053	65.745	66.595
	q	51.7	51.9	52.0	51.9	61.522	61.255	59.958	60.991
	s	53.7	53.5	53.5	53.4	42.534	41.654	41.778	41.778
	g	56.8	56.5	57.0	56.7	65.885	65.605	66.739	65.328
	u	57.2	57.0	57.1	57.4	66.883	64.509	66.309	66.167
	w	57.6	57.3	56.9	57.2	65.745	66.595	66.167	65.885
neos-1451294	d	900.0	900.0	900.0	900.0	9.444	3.299	4.403	4.276
	q	900.0	900.0	900.0	900.0	8.285	8.229	12.518	8.968
	s	729.4	900.0	900.0	605.3	18.417	22.086	32.852	20.011
	g	900.0	900.0	900.0	900.0	28.648	24.185	27.060	26.788
	u	378.7	900.0	900.0	900.0	3.559	4.211	21.426	8.309
	w	605.2	900.0	900.0	900.0	6.707	8.179	15.942	7.556
neos-1460543	d	900.0	900.0	900.0	900.0	2.458	2.296	2.496	1.885
	q	900.0	900.0	900.0	900.0	1.679	3.202	1.613	1.535
	s	900.0	900.0	900.0	900.0	2.619	2.706	2.822	2.739
	g	900.0	900.0	900.0	900.0	2.046	2.100	2.413	2.074
	u	900.0	900.0	900.0	900.0	1.622	6.415	4.410	3.031
	w	900.0	900.0	900.0	900.0	2.904	2.514	2.097	3.049
neos-1461051	d	38.5	35.2	34.3	34.1	795.168	830.207	792.931	824.631
	q	34.2	35.4	28.9	44.1	277.847	337.652	322.667	382.118
	s	37.9	42.3	45.2	25.8	445.900	453.740	503.525	432.353
	g	36.6	32.0	34.3	31.4	800.596	806.329	851.208	779.617

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Table 4: LP pricing results for every tested instance, seed, and pricing method from the experiment in Section 3.1.

		time				LPthpt			
		0	1	2	3	0	1	2	3
Instance	P								
	u	35.8	43.4	31.5	36.8	714.570	691.525	643.075	758.913
	w	40.7	42.3	38.1	38.2	573.388	571.414	605.011	607.380
neos-1467467	d	900.0	900.0	900.0	900.0	24.860	21.612	49.605	16.639
	q	900.0	900.0	900.0	900.0	12.960	15.793	17.322	22.622
	s	900.0	900.0	900.0	900.0	29.062	40.314	28.997	21.847
	g	900.0	900.0	900.0	900.0	15.579	31.152	32.141	10.119
	u	900.0	900.0	900.0	900.0	16.495	22.170	17.428	15.610
	w	900.0	900.0	900.0	900.0	26.001	28.308	18.951	24.485
neos-1480121	d	13.2	3.5	1.0	24.5	739.000	9639.000	1144.000	793.000
	q	1.1	1.0	7.6	17.1	1335.000	927.000	843.000	1460.000
	s	10.6	11.8	13.1	1.4	956.000	728.000	1075.000	974.000
	g	14.7	0.5	0.9	24.5	6666.355	536.000	900.000	814.000
	u	13.8	0.5	5.5	24.7	4133.000	213.000	12433.594	1001.000
	w	13.2	0.5	1.2	24.7	1628.000	731.000	1212.000	842.000
neos-1595230	d	51.5	205.3	121.8	127.9	497.929	365.620	569.562	559.069
	q	900.0	900.0	118.2	300.3	261.400	157.614	122.322	88.502
	s	236.7	85.0	152.4	248.9	231.259	244.870	256.489	149.807
	g	60.0	90.2	157.2	88.0	522.883	458.828	658.616	529.815
	u	58.3	100.4	149.6	69.5	586.770	417.855	615.374	598.584
	w	73.2	123.7	252.3	113.5	341.075	272.816	445.843	361.392
neos-522351	d	1.3	1.8	1.6	1.8	34.000	42.000	38.000	33.000
	q	2.2	1.3	1.8	1.5	37.000	20.000	33.000	30.000
	s	2.6	2.9	3.0	1.1	34.000	42.000	40.000	19.000
	g	1.3	1.7	1.6	1.7	34.000	42.000	38.000	33.000
	u	1.3	1.7	1.6	1.8	34.000	42.000	38.000	33.000
	w	1.3	1.8	1.6	1.8	34.000	42.000	38.000	33.000
neos-547911	d	19.5	19.4	19.3	19.4	121.069	120.312	122.611	122.222
	q	27.9	26.5	26.2	22.4	150.000	158.667	155.217	159.000
	s	21.4	21.4	21.4	21.3	253.333	285.000	255.224	249.635
	g	22.4	17.0	25.3	19.6	274.272	297.000	256.923	354.206
	u	16.6	26.3	27.3	33.0	131.000	167.495	154.651	158.728
	w	18.2	18.3	18.3	18.1	221.951	233.333	220.161	220.161
neos-555298	d	75.2	58.9	54.4	56.4	304.229	324.000	153.107	159.509
	q	71.6	95.4	65.6	91.9	166.346	229.055	162.951	267.759
	s	494.3	310.8	349.8	665.6	57.805	45.047	37.519	37.416
	g	61.5	73.2	54.2	62.1	214.159	324.876	154.857	246.178
	u	63.9	59.7	63.8	59.8	205.859	225.229	212.400	272.455
	w	64.8	79.5	54.6	75.6	234.194	292.203	153.977	288.330
neos-555771	d	3.1	2.3	8.1	2.7	45.000	37.000	105.000	38.000
	q	12.1	3.2	4.4	3.6	99.000	30.000	44.000	54.000
	s	6.6	8.3	6.3	4.8	64.000	70.000	65.000	37.000
	g	3.2	2.3	9.0	2.7	45.000	37.000	88.000	38.000
	u	3.3	2.3	8.5	2.7	45.000	37.000	101.000	38.000
	w	3.3	2.3	7.7	2.7	45.000	37.000	86.000	38.000
neos-555884	d	900.0	900.0	900.0	900.0	57.949	111.382	72.739	60.007
	q	900.0	900.0	900.0	900.0	50.697	46.992	43.646	41.174
	s	900.0	900.0	900.0	900.0	50.493	39.694	44.628	53.171
	g	900.0	900.0	900.0	900.0	68.451	82.694	67.083	50.593
	u	900.0	900.0	900.0	900.0	52.217	77.317	88.874	51.036
	w	900.0	900.0	900.0	900.0	44.021	69.394	70.947	57.822
neos-578379	d	172.8	172.5	169.4	172.0	1.000	1.000	1.000	1.000
	q	172.8	172.2	172.5	172.0	1.000	1.000	1.000	1.000
	s	172.3	172.6	172.2	169.2	1.000	1.000	1.000	1.000
	g	171.5	173.2	173.7	173.4	1.000	1.000	1.000	1.000
	u	172.6	172.9	172.3	172.0	1.000	1.000	1.000	1.000
	w	172.3	173.6	169.5	172.2	1.000	1.000	1.000	1.000
neos-585192	d	16.3	16.4	16.3	16.3	945.665	1097.987	1028.931	1003.681
	q	17.0	17.2	19.1	17.4	967.901	872.973	885.714	958.621
	s	32.5	32.6	32.5	32.7	170.895	174.150	167.979	169.089
	g	16.5	16.7	15.3	16.8	1009.877	1039.375	1176.271	966.860
	u	15.3	17.2	15.4	18.7	1007.586	895.588	944.000	977.000
	w	15.3	15.3	15.3	15.3	769.620	856.338	821.622	794.771
neos-595904	d	11.0	11.0	10.9	11.1	96.000	96.000	96.000	96.000
	q	19.2	19.0	19.1	19.2	75.281	76.136	77.907	80.240
	s	15.0	14.9	15.0	14.9	105.844	101.242	100.617	103.822

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Table 4: LP pricing results for every tested instance, seed, and pricing method from the experiment in Section 3.1.

		time				LPthpt			
		0	1	2	3	0	1	2	3
Instance	P								
	g	11.1	11.0	11.1	11.1	96.000	96.000	96.000	96.000
	u	10.9	10.9	11.0	11.0	96.000	96.000	96.000	96.000
	w	10.9	10.9	10.9	10.9	96.000	96.000	96.000	96.000
neos-595925	d	9.2	9.1	9.1	9.1	210.000	210.000	210.000	210.000
	q	24.9	25.1	25.1	25.1	159.218	148.438	147.668	145.408
	s	21.4	21.4	21.3	21.4	173.786	170.476	172.115	185.492
	g	9.1	9.1	9.1	9.1	210.000	210.000	210.000	210.000
	u	9.1	9.1	9.1	9.1	210.000	210.000	210.000	210.000
	w	9.1	9.1	9.1	9.1	210.000	210.000	210.000	210.000
neos-598183	d	5.0	5.0	5.1	5.1	133.000	133.000	133.000	133.000
	q	7.1	7.0	7.2	5.8	168.000	159.000	179.000	145.000
	s	6.7	6.7	6.7	6.7	177.000	177.000	177.000	177.000
	g	5.1	5.1	5.1	5.1	133.000	133.000	133.000	133.000
	u	4.9	5.1	6.7	6.8	112.000	139.000	188.000	207.000
	w	5.1	5.1	5.1	5.1	133.000	133.000	133.000	133.000
neos-603073	d	95.6	94.6	123.5	96.2	303.071	307.264	362.171	309.267
	q	85.5	126.3	99.6	110.6	214.449	258.581	241.304	255.463
	s	254.4	900.0	900.0	220.5	344.801	434.353	422.650	351.205
	g	155.5	900.0	900.0	74.6	437.833	555.799	620.531	366.135
	u	900.0	154.2	80.3	900.0	733.273	458.701	296.176	560.516
	w	900.0	900.0	900.0	246.4	520.833	451.044	549.142	322.889
neos-612162	d	16.8	16.8	16.7	16.7	302.632	294.872	288.945	291.878
	q	24.4	25.4	24.7	25.4	181.095	179.469	182.447	185.028
	s	26.4	26.1	26.2	26.1	79.427	79.343	79.008	80.193
	g	16.4	16.6	17.7	18.4	276.562	278.740	282.609	283.161
	u	17.7	19.3	18.6	19.4	271.852	263.196	252.632	259.179
	w	23.5	21.9	22.0	23.5	202.305	209.315	211.170	204.480
neos-631694	d	900.0	900.0	900.0	900.0	193.034	283.865	232.537	161.725
	q	900.0	900.0	900.0	900.0	183.926	153.697	164.938	249.458
	s	900.0	900.0	900.0	900.0	168.039	170.057	185.994	194.218
	g	900.0	900.0	900.0	900.0	234.724	232.544	208.382	238.271
	u	900.0	900.0	900.0	900.0	226.462	240.406	264.352	193.520
	w	900.0	900.0	900.0	900.0	202.895	205.003	226.754	208.135
neos-631710	d	900.0	900.0	900.0	900.0	0.001	0.001	0.001	0.001
	q	900.0	900.0	900.0	900.0	0.001	0.001	0.002	0.001
	s	900.0	900.0	900.0	900.0	0.001	0.001	0.001	0.001
	g	900.0	900.0	900.0	900.0	0.001	0.001	0.001	0.001
	u	900.0	900.0	900.0	900.0	0.001	0.001	0.001	0.001
	w	900.0	900.0	900.0	900.0	0.001	0.001	0.001	0.001
neos-686190	d	97.2	96.8	96.7	97.2	493.897	493.897	493.432	494.675
	q	83.1	96.0	143.2	125.8	403.563	435.837	404.192	428.286
	s	411.7	498.0	156.3	610.9	136.759	147.133	122.868	132.091
	g	75.7	86.7	84.7	89.6	509.108	505.475	522.610	489.540
	u	82.2	143.5	67.8	132.2	512.571	512.401	503.409	475.985
	w	109.8	100.0	92.9	92.1	463.514	413.791	459.636	461.516
neos-691073	d	900.0	900.0	900.0	900.0	3.376	3.196	1.919	3.056
	q	900.0	900.0	900.0	900.0	0.123	0.118	0.141	0.113
	s	900.0	900.0	900.0	900.0	0.728	0.835	0.859	0.921
	g	900.0	900.0	900.0	900.0	2.343	2.857	2.049	1.601
	u	900.0	900.0	900.0	900.0	3.337	4.875	2.125	2.972
	w	900.0	900.0	900.0	900.0	1.478	2.365	1.502	1.388
neos-717614	d	6.4	6.5	6.4	6.5	2411.000	2411.000	2411.000	2411.000
	q	8.0	8.0	8.1	8.1	1090.000	1090.000	1090.000	1090.000
	s	12.4	12.4	12.4	12.2	392.929	413.830	419.784	424.364
	g	40.9	41.0	41.2	47.8	2704.805	2725.759	2720.374	2730.295
	u	4.3	7.2	7.2	199.6	804.000	2703.731	2308.725	2745.518
	w	8.5	8.5	8.5	8.5	2252.976	2610.345	2557.432	2441.935
neos-791021	d	900.0	900.0	900.0	900.0	0.063	0.054	0.055	0.073
	q	308.1	62.9	76.5	82.7	0.692	0.486	0.465	0.499
	s	34.8	28.9	26.9	40.3	1.248	1.259	1.461	1.762
	g	250.4	310.1	289.4	298.0	1.355	1.177	1.019	0.940
	u	900.0	665.3	900.0	900.0	0.243	0.255	0.139	0.186
	w	452.1	495.9	401.0	658.3	0.472	0.700	0.525	0.555
neos-803219	d	37.0	42.1	34.5	29.8	1554.326	1637.955	1596.640	1512.301
	q	38.6	27.4	40.4	42.0	942.002	936.317	1041.804	1030.062

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Table 4: LP pricing results for every tested instance, seed, and pricing method from the experiment in Section 3.1.

		time				LPthpt			
		0	1	2	3	0	1	2	3
Instance	P								
	s	42.0	41.9	45.3	37.0	1019.961	1006.568	978.178	1044.681
	g	36.7	42.0	34.3	29.4	1595.604	1637.955	1593.822	1533.441
	u	36.5	30.3	30.9	33.5	1458.618	1472.386	1545.419	1497.676
	w	37.0	42.1	34.4	29.6	1537.864	1677.905	1640.145	1602.360
neos-803220	d	81.5	76.8	72.5	79.6	2771.021	2901.084	2811.629	2740.566
	q	92.6	87.7	108.9	81.4	1756.395	1764.438	1682.540	2105.215
	s	103.4	97.3	98.5	98.7	1753.464	1754.584	1787.896	1716.346
	g	81.9	77.7	72.7	82.6	2763.752	2898.351	2789.727	2706.704
	u	77.7	75.3	76.5	97.4	2738.143	2809.409	2710.878	2702.465
	w	82.0	77.1	72.9	84.2	2752.918	2843.438	2765.492	2744.632
neos-807454	d	2.1	1.9	1.8	2.3	4.000	5.000	5.000	4.000
	q	3.3	3.5	3.2	2.2	4.000	4.902	5.000	4.000
	s	4.7	4.2	3.4	2.4	4.000	4.000	4.000	4.000
	g	2.1	1.9	1.8	2.3	4.000	5.000	5.000	4.000
	u	2.1	1.9	1.8	2.3	4.000	5.000	5.000	4.000
	w	2.1	1.9	1.8	2.3	4.000	5.000	5.000	4.000
neos-808072	d	22.9	18.8	22.8	18.0	93.074	62.059	97.030	80.786
	q	25.5	27.4	23.4	37.1	37.225	74.960	63.287	71.250
	s	36.5	32.4	39.8	31.6	60.000	54.791	65.738	55.313
	g	26.3	20.8	23.0	22.0	64.378	67.246	102.148	56.500
	u	20.0	30.5	29.8	21.9	86.799	94.422	66.007	76.803
	w	21.4	21.0	26.3	25.8	90.411	62.784	87.634	72.080
neos-820146	d	900.0	900.0	900.0	900.0	1200.173	1340.065	1475.637	1278.118
	q	900.0	900.0	900.0	900.0	479.881	412.138	338.140	430.549
	s	900.0	900.0	900.0	900.0	524.444	531.321	509.587	546.731
	g	900.0	900.0	900.0	900.0	1375.069	1347.657	1483.491	1517.417
	u	900.0	900.0	900.0	900.0	1175.832	1316.960	1314.416	1282.637
	w	900.0	900.0	900.0	900.0	905.074	814.951	889.472	885.397
neos-825075	d	1.2	1.4	1.4	1.9	14.000	19.000	33.000	30.000
	q	2.3	2.0	1.4	1.8	22.000	32.000	10.000	33.000
	s	1.5	1.5	1.8	2.1	20.000	18.000	26.000	46.000
	g	1.2	1.4	1.4	1.9	14.000	19.000	30.000	30.000
	u	1.4	1.4	1.4	1.9	14.000	28.000	29.000	30.000
	w	1.2	1.4	1.5	1.9	14.000	19.000	38.000	30.000
neos-826650	d	900.0	900.0	900.0	900.0	1.410	2.381	1.282	1.624
	q	900.0	900.0	900.0	900.0	4.532	7.315	4.930	9.240
	s	900.0	900.0	900.0	900.0	18.415	23.573	19.578	15.642
	g	900.0	900.0	900.0	900.0	19.221	21.803	20.262	20.733
	u	900.0	900.0	900.0	900.0	0.687	0.762	2.770	1.676
	w	900.0	900.0	900.0	900.0	4.557	4.262	4.093	2.082
neos-827015	d	900.0	900.0	900.0	900.0	0.832	0.457	0.632	0.634
	q	900.0	900.0	900.0	900.0	2.000	1.864	1.914	2.067
	s	900.0	900.0	900.0	900.0	3.060	2.532	2.922	2.532
	g	731.0	741.7	802.5	900.0	1.920	1.698	1.643	0.527
	u	676.9	900.0	900.0	900.0	2.073	2.284	1.701	1.793
	w	900.0	900.0	900.0	900.0	1.868	2.001	1.147	1.754
neos-848150	d	11.4	14.8	14.1	12.2	47.000	169.600	165.000	57.000
	q	16.4	18.3	21.1	17.8	33.884	38.168	66.190	84.293
	s	18.0	21.1	25.3	17.6	75.000	82.301	132.618	55.000
	g	12.6	16.7	17.0	12.4	48.000	124.378	199.398	50.000
	u	15.8	15.5	16.0	15.1	147.799	39.344	51.000	116.260
	w	15.2	16.1	14.7	15.1	84.158	71.569	49.505	37.000
neos-850681	d	2.8	2.6	3.1	2.4	10.000	15.686	10.606	16.000
	q	3.4	2.6	11.5	2.6	22.000	15.000	35.000	18.000
	s	17.7	30.5	2.4	9.7	33.858	43.605	16.000	31.000
	g	2.8	2.6	3.2	2.4	9.677	15.686	10.448	16.000
	u	2.8	2.6	3.2	2.4	9.917	15.842	10.294	16.000
	w	2.8	2.6	3.1	2.4	10.000	16.000	10.294	16.000
neos-880324	d	0.7	1.4	0.8	1.2	127.000	174.000	129.000	169.000
	q	1.0	0.9	1.0	1.2	160.000	132.000	125.000	175.000
	s	1.4	1.4	1.4	1.7	166.000	176.000	173.000	185.000
	g	0.6	1.4	0.8	1.2	127.000	174.000	129.000	169.000
	u	0.7	1.4	0.8	1.3	135.000	188.000	129.000	193.000
	w	0.7	1.4	0.8	1.2	127.000	174.000	129.000	169.000
neos-885086	d	900.0	139.2	900.0	900.0	0.059	2.444	0.094	0.065

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Table 4: LP pricing results for every tested instance, seed, and pricing method from the experiment in Section 3.1.

		time				LPthpt			
		0	1	2	3	0	1	2	3
Instance	P								
	q	900.0	900.0	900.0	696.2	0.205	0.027	0.047	1.480
	s	900.0	900.0	900.0	900.0	0.336	0.369	0.423	0.373
	g	900.0	900.0	900.0	900.0	0.183	2.210	0.162	0.205
	u	900.0	138.7	900.0	900.0	0.082	2.459	0.081	0.080
	w	900.0	900.0	900.0	900.0	0.130	0.156	0.260	0.122
neos-892255	d	74.3	170.4	79.6	77.6	22.350	7.585	21.216	22.399
	q	127.1	418.9	138.2	193.8	16.333	5.851	10.332	12.536
	s	44.6	43.0	64.9	40.1	50.414	43.019	38.648	56.081
	g	62.5	280.3	57.8	84.2	34.596	8.507	34.235	28.529
	u	117.1	167.2	133.2	900.0	15.552	12.495	11.608	13.577
	w	70.5	226.9	136.8	128.0	30.003	7.681	13.821	16.324
neos-905856	d	175.7	10.8	632.1	310.2	205.616	68.000	162.907	183.593
	q	900.0	535.5	64.9	189.7	71.534	68.995	79.381	134.994
	s	303.6	392.5	559.0	117.0	133.597	234.365	158.411	165.356
	g	186.8	57.5	402.5	264.3	189.721	165.786	222.647	217.985
	u	244.8	20.2	88.5	73.3	220.540	166.165	188.405	116.952
	w	192.4	66.8	182.9	541.5	175.281	152.415	150.450	138.977
neos-912015	d	11.4	9.0	7.1	13.9	309.155	190.000	123.000	371.134
	q	8.3	15.3	16.7	12.3	36.000	160.252	158.537	216.575
	s	12.2	8.0	12.8	9.3	159.000	84.000	168.000	145.000
	g	9.3	9.6	6.0	5.1	290.000	327.000	76.000	33.000
	u	11.4	11.3	10.1	6.6	348.503	342.017	267.647	54.000
	w	12.1	5.2	11.5	9.5	233.158	43.000	192.623	97.000
neos-912023	d	4.7	9.7	7.3	6.9	23.000	236.000	77.000	99.000
	q	10.4	7.7	6.8	10.3	77.000	31.000	22.000	22.000
	s	6.2	14.9	7.1	5.7	23.000	53.000	25.000	20.000
	g	5.2	10.7	8.1	10.1	23.000	397.030	116.000	220.000
	u	4.8	9.9	10.7	6.3	23.000	117.000	244.000	32.000
	w	5.1	11.7	8.9	7.5	23.000	206.618	111.000	71.000
neos-930752	d	900.0	900.0	900.0	900.0	0.042	0.063	0.069	0.054
	q	900.0	900.0	900.0	900.0	1.080	1.414	1.170	1.654
	s	900.0	900.0	900.0	900.0	3.447	3.614	3.859	4.244
	g	900.0	900.0	900.0	900.0	1.613	2.375	2.045	1.800
	u	900.0	900.0	900.0	900.0	0.210	0.256	0.161	0.135
	w	900.0	900.0	900.0	900.0	0.721	0.319	0.153	0.358
neos-931517	d	900.0	900.0	900.0	900.0	0.666	0.754	0.834	0.883
	q	900.0	900.0	900.0	900.0	0.450	0.661	0.528	0.523
	s	900.0	900.0	900.0	900.0	1.542	1.590	1.389	1.609
	g	900.0	900.0	900.0	900.0	0.811	0.660	1.065	0.904
	u	900.0	900.0	900.0	900.0	0.827	0.615	0.906	0.937
	w	900.0	900.0	900.0	900.0	1.248	0.731	1.037	1.060
neos-933364	d	38.1	34.6	24.4	30.4	2134.055	1269.845	985.203	1128.291
	q	52.1	48.0	185.5	37.7	1156.879	915.906	1652.640	1330.435
	s	58.9	48.2	37.9	41.0	599.461	600.460	457.606	507.455
	g	20.5	28.2	29.2	39.3	1287.197	1069.605	1686.247	1300.957
	u	34.0	113.7	31.6	35.2	1416.495	1936.163	1096.829	1136.715
	w	24.2	34.9	41.0	26.4	791.304	1119.696	1139.925	1024.032
neos-933815	d	564.3	27.0	35.6	33.2	3447.969	2260.145	2139.712	1808.087
	q	62.9	900.0	75.9	77.5	2474.940	2623.024	2807.937	2634.489
	s	47.1	65.0	33.8	35.6	720.135	851.177	634.921	731.229
	g	470.3	36.4	56.4	41.7	2813.633	2666.760	3165.503	2752.853
	u	428.5	39.5	31.9	18.7	2749.309	2146.325	2755.150	1332.865
	w	608.7	25.6	48.4	30.9	3054.541	2133.871	3046.770	1969.260
neos-935496	d	900.0	900.0	900.0	900.0	370.102	319.893	287.201	391.776
	q	900.0	900.0	900.0	900.0	110.251	136.301	231.008	214.681
	s	900.0	900.0	900.0	900.0	182.856	137.957	165.705	175.276
	g	900.0	900.0	900.0	900.0	370.773	158.636	156.460	305.160
	u	900.0	900.0	900.0	900.0	278.231	302.628	227.144	292.852
	w	900.0	900.0	900.0	900.0	293.130	185.492	222.155	203.056
neos-935674	d	900.0	900.0	900.0	900.0	243.108	261.205	226.507	308.857
	q	900.0	900.0	900.0	900.0	227.703	142.471	152.902	161.751
	s	900.0	900.0	900.0	900.0	143.850	153.672	155.693	147.455
	g	900.0	900.0	900.0	900.0	334.405	382.729	308.491	286.157
	u	900.0	900.0	900.0	900.0	331.086	345.513	236.860	270.209
	w	900.0	900.0	900.0	900.0	183.610	229.557	239.872	156.314

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Table 4: LP pricing results for every tested instance, seed, and pricing method from the experiment in Section 3.1.

		time				LPthpt			
		0	1	2	3	0	1	2	3
Instance	P								
neos-937815	d	900.0	900.0	900.0	900.0	0.019	0.014	0.016	0.017
	q	900.0	900.0	900.0	900.0	0.276	0.296	0.268	0.205
	s	900.0	900.0	900.0	900.0	0.310	0.551	0.399	0.432
	g	900.0	900.0	900.0	900.0	0.231	0.144	0.279	0.135
	u	900.0	900.0	900.0	900.0	0.059	0.188	0.095	0.125
	w	900.0	900.0	900.0	900.0	0.218	0.099	0.145	0.106
neos-948126	d	900.0	900.0	900.0	900.0	0.017	0.016	0.015	0.015
	q	900.0	900.0	900.0	900.0	0.227	0.194	0.204	0.134
	s	900.0	900.0	900.0	900.0	0.460	0.613	0.453	0.478
	g	900.0	900.0	900.0	900.0	0.171	0.093	0.120	0.153
	u	900.0	900.0	900.0	900.0	0.072	0.079	0.082	0.070
	w	900.0	900.0	900.0	900.0	0.167	0.109	0.101	0.115
neos-948268	d	9.4	11.2	14.6	8.2	0.208	0.292	0.196	0.204
	q	10.3	9.7	13.2	16.2	0.212	0.292	0.195	0.204
	s	16.8	11.5	188.1	14.1	0.211	0.289	3.166	0.203
	g	9.4	12.6	14.7	8.2	0.210	0.292	0.194	0.204
	u	9.4	12.6	14.6	8.2	0.210	0.289	0.194	0.205
	w	9.4	12.6	14.7	8.2	0.210	0.289	0.194	0.206
neos-956971	d	900.0	900.0	900.0	900.0	0.008	0.008	0.008	0.008
	q	856.3	900.0	900.0	900.0	0.161	0.194	0.119	0.350
	s	900.0	900.0	900.0	900.0	1.241	0.790	0.775	0.958
	g	900.0	900.0	900.0	900.0	0.150	0.113	0.118	0.187
	u	900.0	900.0	900.0	900.0	0.028	0.087	0.056	0.083
	w	900.0	900.0	900.0	900.0	0.064	0.081	0.079	0.089
neos-960392	d	900.0	900.0	900.0	900.0	0.008	0.008	0.010	0.012
	q	900.0	900.0	780.3	900.0	0.177	0.266	0.213	0.247
	s	645.5	436.8	505.8	415.9	1.279	1.467	1.609	1.648
	g	900.0	900.0	900.0	900.0	0.053	0.098	0.078	0.092
	u	900.0	900.0	900.0	900.0	0.070	0.136	0.109	0.098
	w	900.0	900.0	900.0	900.0	0.052	0.093	0.082	0.067
neos13	d	222.9	223.6	223.8	222.9	497.091	489.964	502.574	492.169
	q	731.4	896.3	499.4	401.3	296.185	313.900	398.259	368.434
	s	514.8	510.6	508.9	510.2	396.987	399.495	399.944	403.401
	g	215.1	138.0	147.4	136.9	511.487	399.098	428.857	354.859
	u	296.0	259.0	447.1	190.1	508.402	475.102	506.231	358.667
	w	797.7	799.9	803.2	796.6	423.524	420.887	424.123	426.081
newdano	d	900.0	900.0	900.0	900.0	208.515	190.594	209.000	198.997
	q	900.0	900.0	900.0	900.0	40.456	40.865	40.965	36.666
	s	900.0	900.0	900.0	900.0	98.065	112.632	108.475	101.520
	g	900.0	900.0	900.0	900.0	183.198	185.652	205.476	185.849
	u	900.0	900.0	900.0	900.0	184.251	199.377	201.902	188.435
	w	900.0	900.0	900.0	900.0	127.921	128.197	129.864	119.249
nw04	d	26.5	26.6	26.5	26.5	157.000	157.000	157.000	157.000
	q	41.3	32.1	34.5	33.5	155.618	108.148	114.024	107.463
	s	24.7	24.8	24.8	24.7	91.000	91.000	91.000	91.000
	g	26.6	26.6	26.6	26.6	157.000	157.000	157.000	157.000
	u	26.6	26.6	26.6	26.6	157.000	157.000	157.000	157.000
	w	26.6	26.6	26.7	26.6	157.000	157.000	157.000	157.000
opt1217	d	0.5	0.5	0.5	0.5	17.000	24.000	21.000	24.000
	q	0.5	0.5	0.5	0.5	19.000	27.000	22.000	22.000
	s	0.5	0.5	0.5	0.5	17.000	22.000	28.000	21.000
	g	0.5	0.5	0.5	0.5	17.000	24.000	21.000	24.000
	u	0.5	0.5	0.5	0.5	17.000	24.000	21.000	24.000
	w	0.5	0.5	0.5	0.5	17.000	24.000	21.000	24.000
p0548	d	0.5	0.5	0.5	0.5	33.000	33.000	33.000	33.000
	q	0.5	0.5	0.5	0.5	35.000	35.000	35.000	35.000
	s	0.5	0.5	0.5	0.5	37.000	37.000	37.000	37.000
	g	0.5	0.5	0.5	0.5	33.000	33.000	33.000	33.000
	u	0.5	0.5	0.5	0.5	33.000	33.000	33.000	33.000
	w	0.5	0.5	0.5	0.5	33.000	33.000	33.000	33.000
prod1	d	17.1	17.1	17.4	16.8	7156.893	6928.694	7037.421	7220.705
	q	21.2	21.4	20.5	21.2	5728.772	5847.674	6457.744	5580.614
	s	22.4	22.3	22.2	22.1	3748.904	3819.333	3761.978	3676.364
	g	17.4	17.8	17.6	17.9	6890.989	7079.148	7561.538	6167.129
	u	17.2	20.1	78.6	51.0	6227.021	6585.849	6304.552	6875.552

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Table 4: LP pricing results for every tested instance, seed, and pricing method from the experiment in Section 3.1.

		time				LPthpt			
		0	1	2	3	0	1	2	3
Instance	P								
	w	20.5	19.5	19.4	22.4	6991.248	6764.394	7258.812	6526.979
pw-myciel4	d	900.0	900.0	900.0	900.0	364.061	296.295	299.537	342.828
	q	900.0	900.0	900.0	900.0	53.698	70.231	49.005	43.480
	s	900.0	900.0	900.0	900.0	130.578	140.226	149.225	117.235
	g	900.0	900.0	900.0	900.0	318.923	283.605	310.498	302.086
	u	900.0	900.0	900.0	900.0	282.694	284.017	350.265	299.743
	w	900.0	900.0	900.0	900.0	150.701	172.503	168.401	177.257
rentacar	d	2.1	2.0	2.1	2.1	30.000	30.000	30.000	30.000
	q	1.9	1.9	1.9	1.9	32.000	32.000	32.000	32.000
	s	2.3	2.2	2.3	2.3	36.000	36.000	36.000	36.000
	g	2.1	2.1	2.0	2.0	30.000	30.000	30.000	30.000
	u	2.1	2.1	2.1	2.0	30.000	30.000	30.000	30.000
	w	2.1	2.0	2.1	2.1	30.000	30.000	30.000	30.000
rmine6	d	900.0	900.0	900.0	900.0	849.114	851.783	845.140	853.474
	q	900.0	900.0	676.7	800.6	538.530	488.593	524.223	462.907
	s	900.0	900.0	900.0	900.0	550.833	530.828	521.660	547.573
	g	900.0	624.3	638.0	699.7	864.276	853.545	888.432	822.056
	u	900.0	882.0	842.8	824.7	841.542	1058.416	805.381	1043.327
	w	900.0	781.8	900.0	900.0	838.428	873.857	837.505	835.683
rocII-4-11	d	900.0	900.0	900.0	900.0	5.727	4.691	5.741	5.395
	q	252.3	400.2	270.3	490.9	126.487	155.780	96.193	160.837
	s	440.6	580.3	594.6	486.4	78.775	98.828	89.099	73.541
	g	257.0	356.0	449.2	308.6	88.776	100.577	139.253	112.417
	u	372.1	450.6	473.8	482.5	74.244	79.528	60.015	84.076
	w	562.2	611.2	588.8	523.7	42.750	29.076	35.833	37.218
set1ch	d	0.5	0.5	0.5	0.5	40.000	40.000	40.000	40.000
	q	0.5	0.5	0.5	0.5	48.000	48.000	48.000	48.000
	s	0.8	0.8	0.8	0.8	61.000	61.000	61.000	61.000
	g	0.5	0.5	0.5	0.5	40.000	40.000	40.000	40.000
	u	0.5	0.5	0.5	0.5	40.000	40.000	40.000	40.000
	w	0.5	0.5	0.5	0.5	40.000	40.000	40.000	40.000
seymour	d	900.0	900.0	900.0	900.0	59.325	58.978	58.642	58.706
	q	900.0	900.0	900.0	900.0	14.105	16.102	15.807	18.239
	s	900.0	900.0	900.0	900.0	32.711	36.036	34.927	37.059
	g	900.0	900.0	900.0	900.0	68.142	75.937	73.866	71.422
	u	900.0	900.0	900.0	900.0	73.217	64.057	68.747	60.797
	w	900.0	900.0	900.0	900.0	44.729	46.316	39.723	42.675
sp98ic	d	900.0	900.0	900.0	900.0	20.548	9.994	16.045	15.640
	q	900.0	900.0	900.0	900.0	18.022	18.858	26.186	19.626
	s	900.0	900.0	900.0	900.0	21.944	15.384	20.594	31.573
	g	900.0	900.0	900.0	900.0	31.252	16.221	15.990	17.611
	u	900.0	900.0	900.0	900.0	21.864	22.544	18.539	9.492
	w	900.0	900.0	900.0	900.0	23.056	35.577	21.249	17.683
zib54-UUE	d	900.0	900.0	900.0	900.0	149.497	165.691	145.079	164.242
	q	900.0	900.0	900.0	900.0	42.534	44.434	47.953	51.686
	s	900.0	900.0	900.0	900.0	32.047	32.128	30.296	30.923
	g	900.0	900.0	900.0	900.0	168.520	147.731	160.828	159.268
	u	900.0	900.0	900.0	900.0	156.626	154.171	152.450	164.215
	w	900.0	900.0	900.0	900.0	100.997	96.114	93.141	104.656