

# HNCO

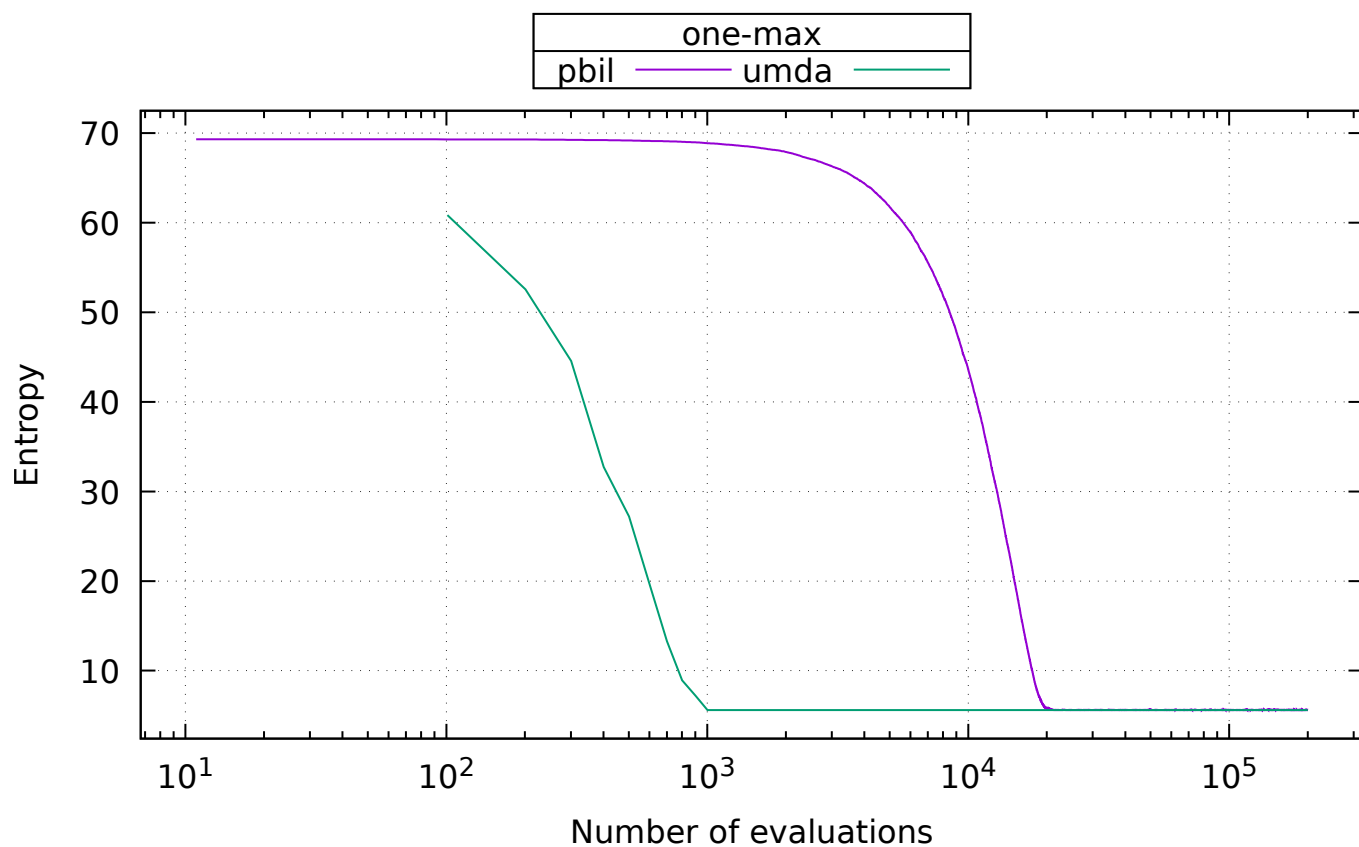
## Evolution of entropy in PBIL and UMDA

August 15, 2021

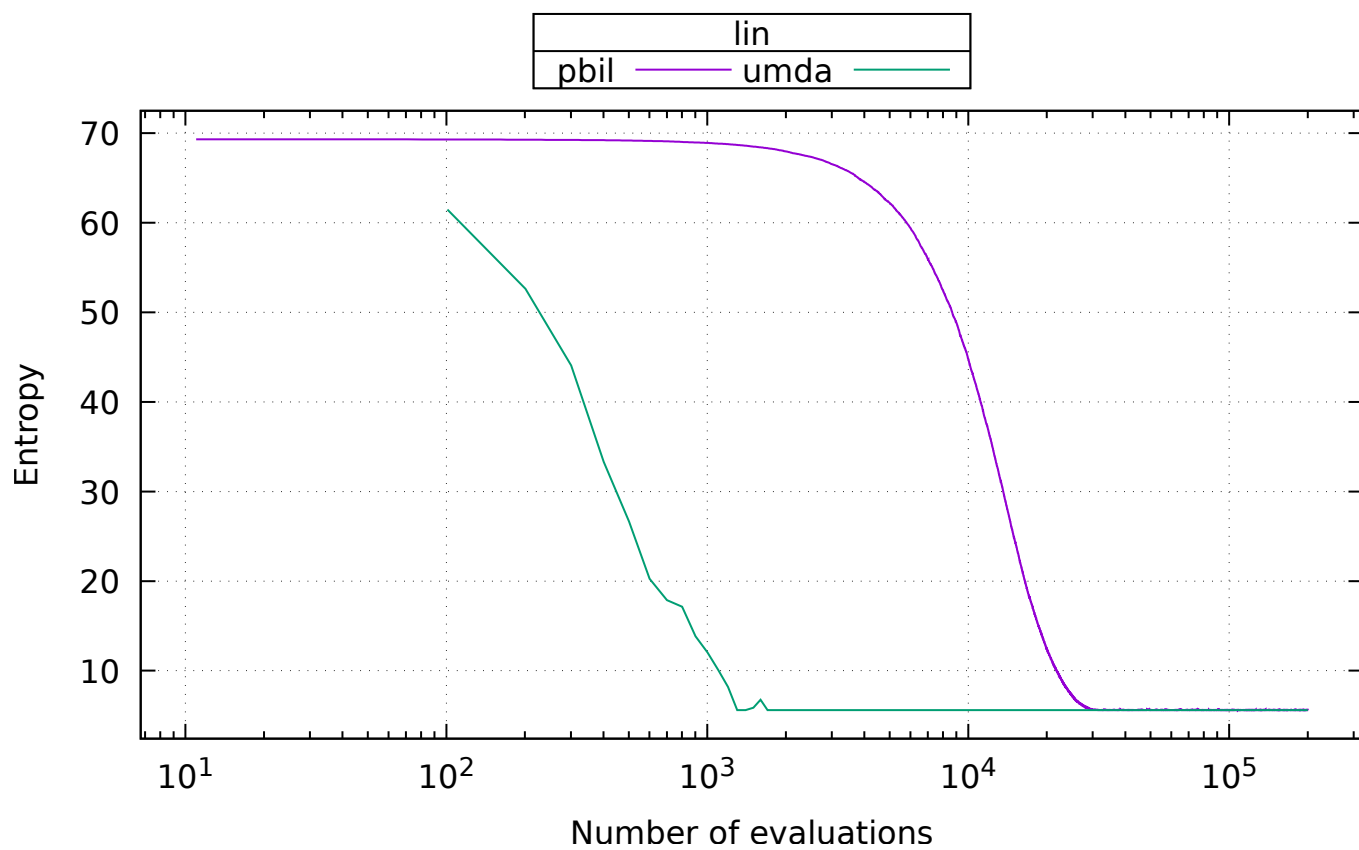
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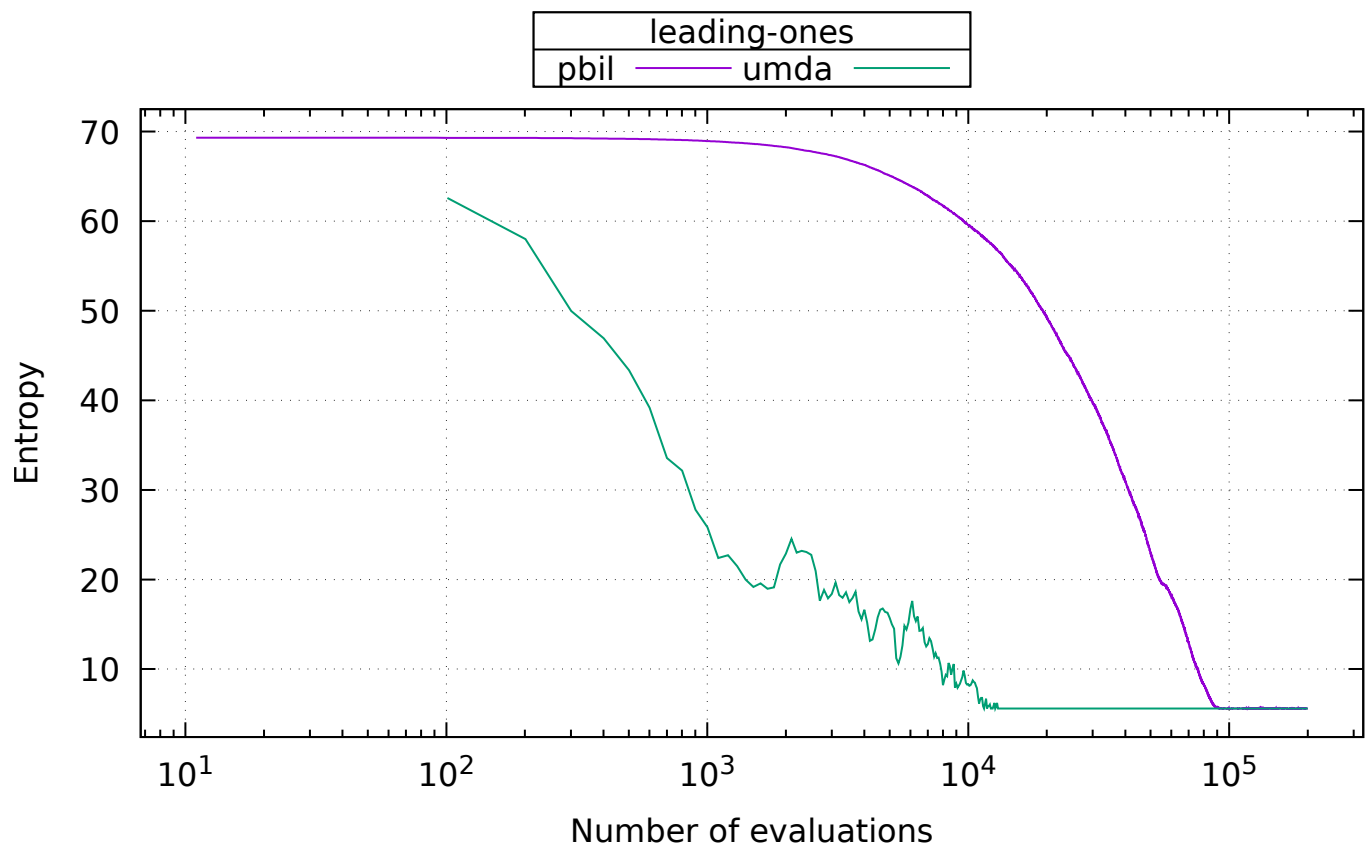
## 1 one-max



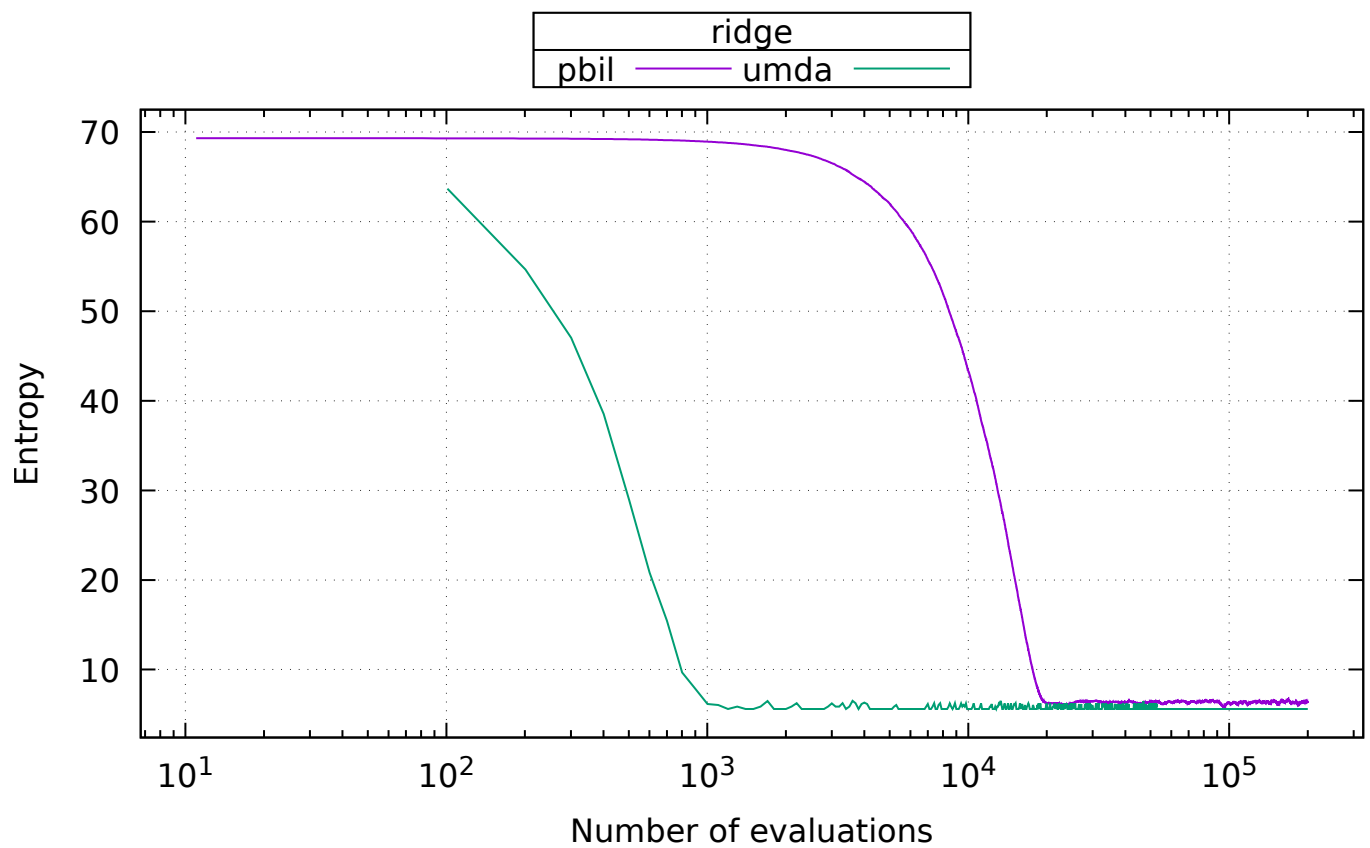
## 2 lin



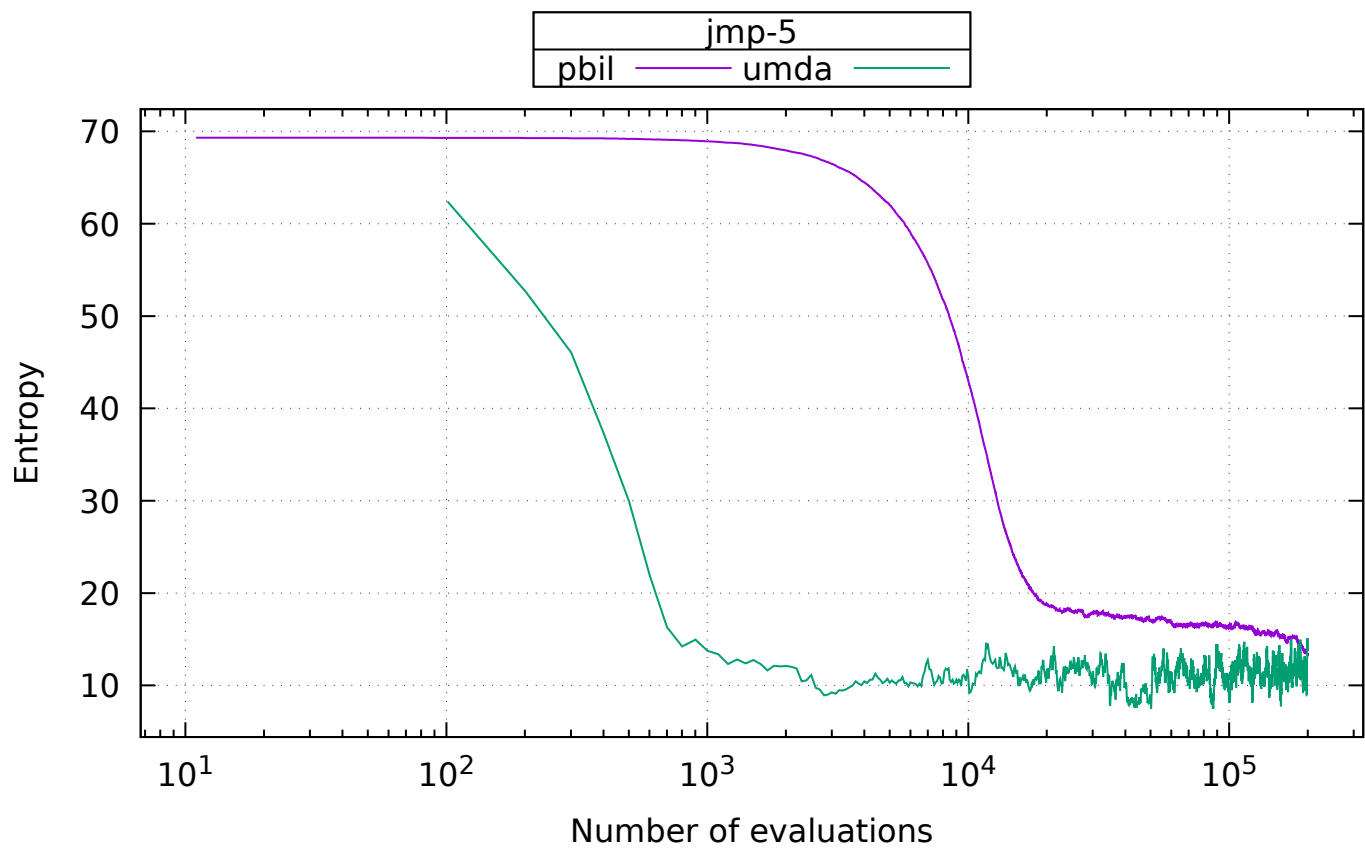
### 3 leading-ones



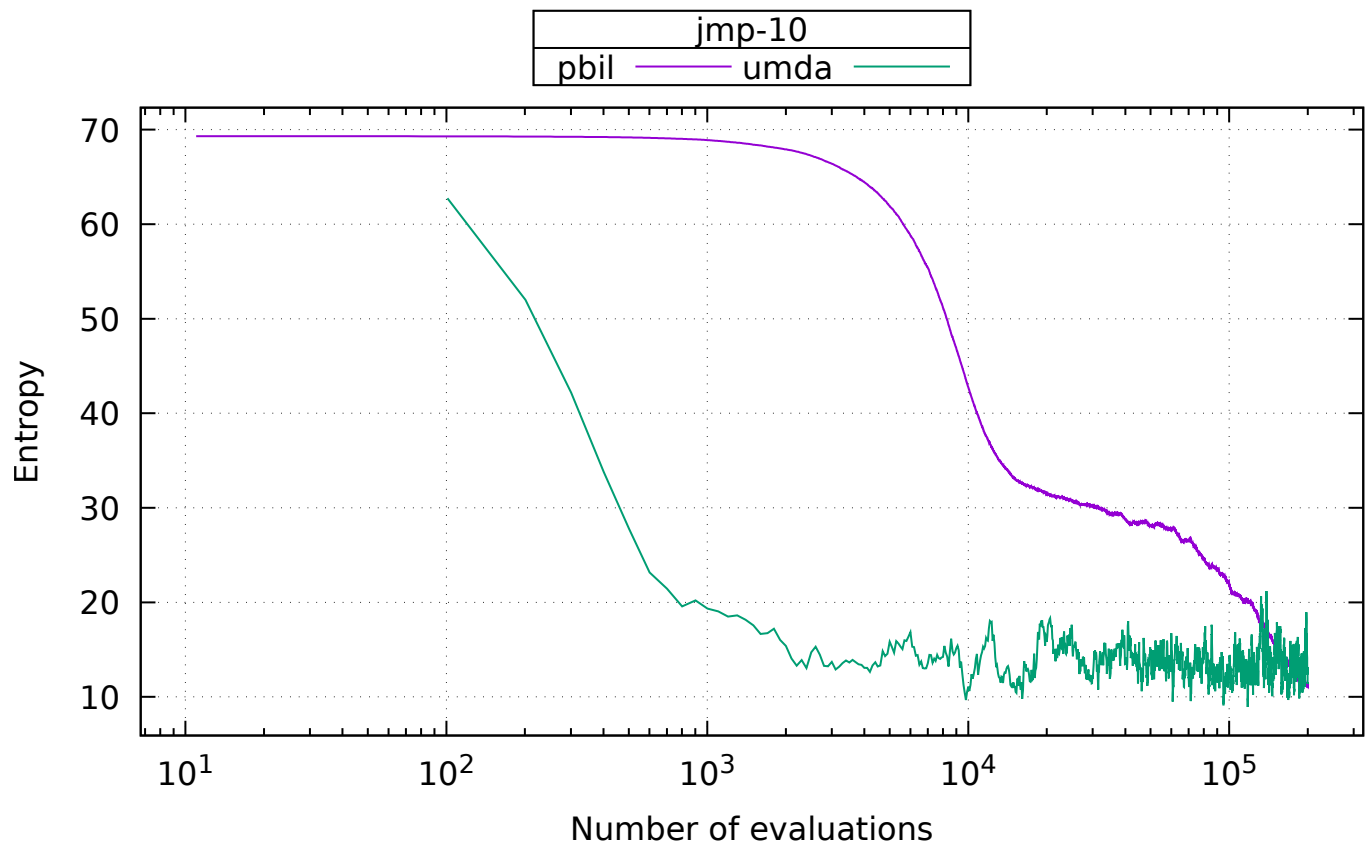
### 4 ridge



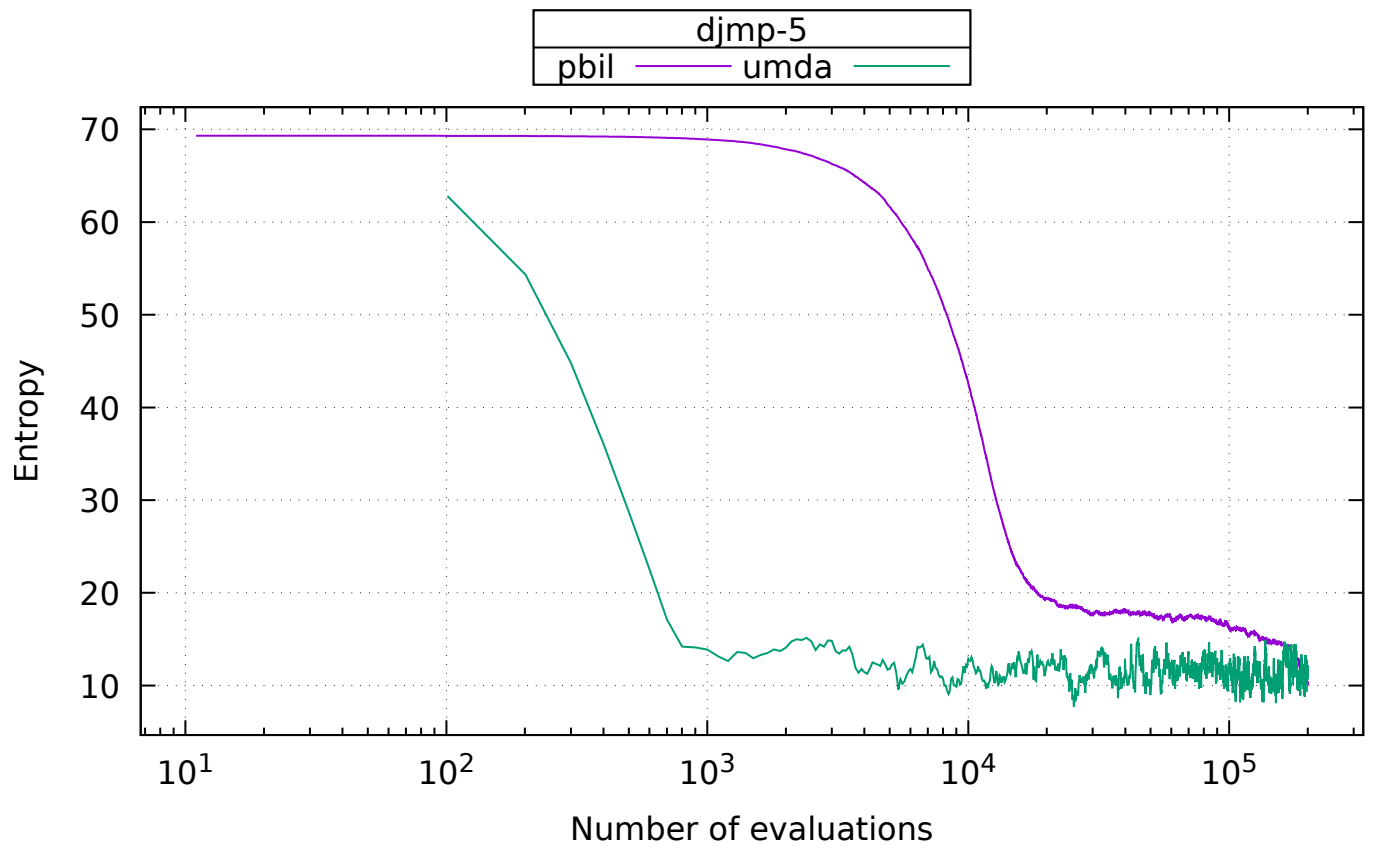
## 5 jmp-5



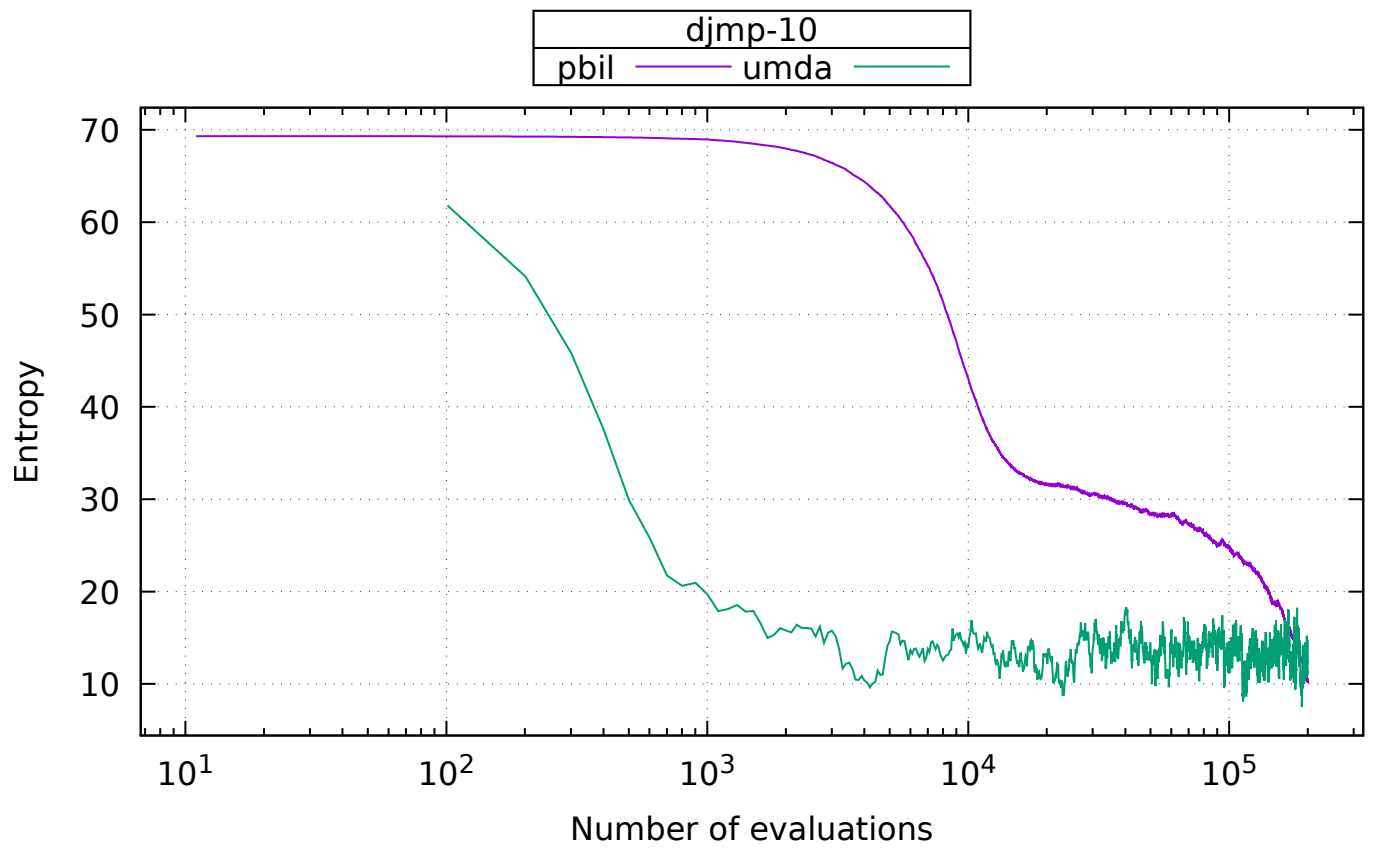
## 6 jmp-10



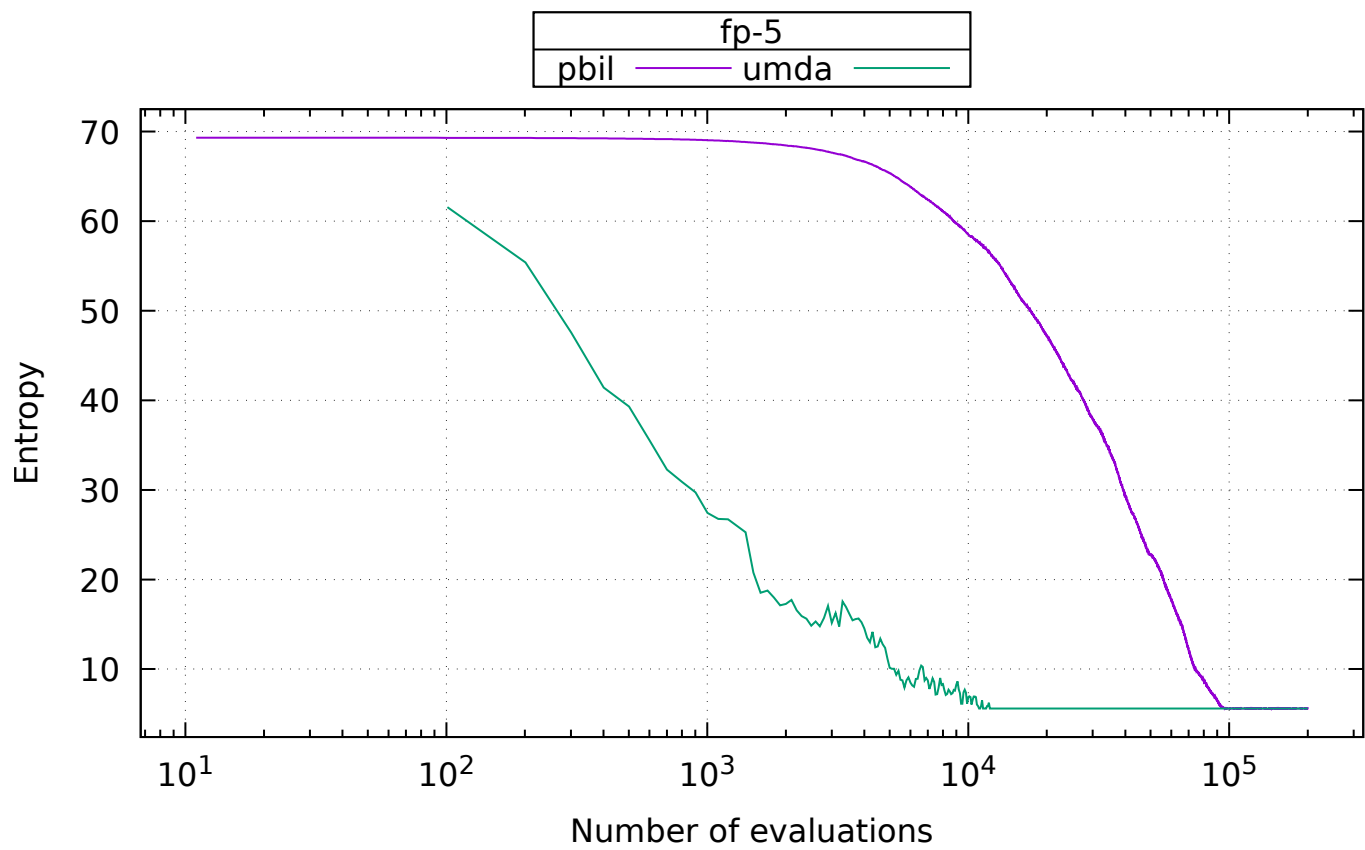
## 7 djump-5



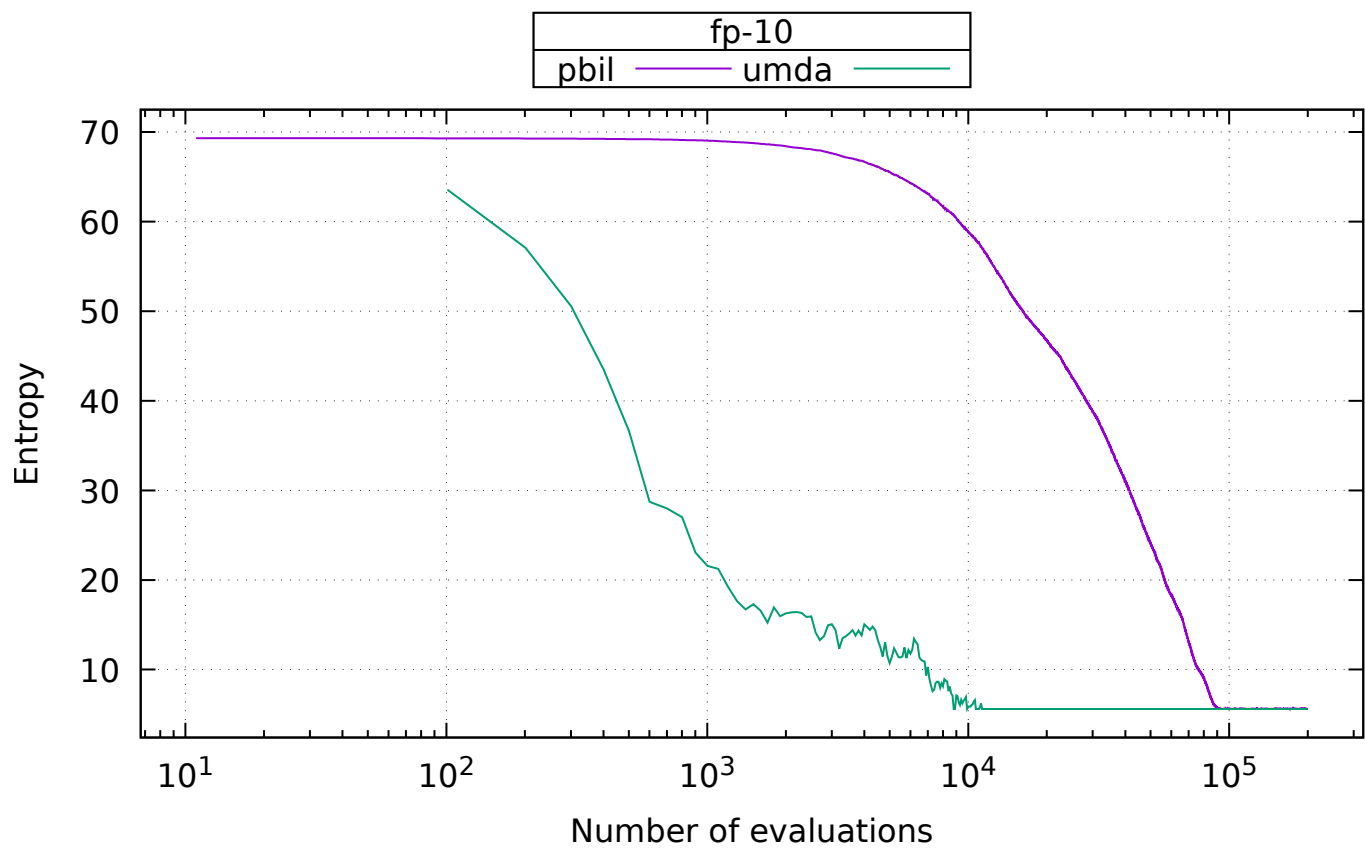
## 8 djump-10



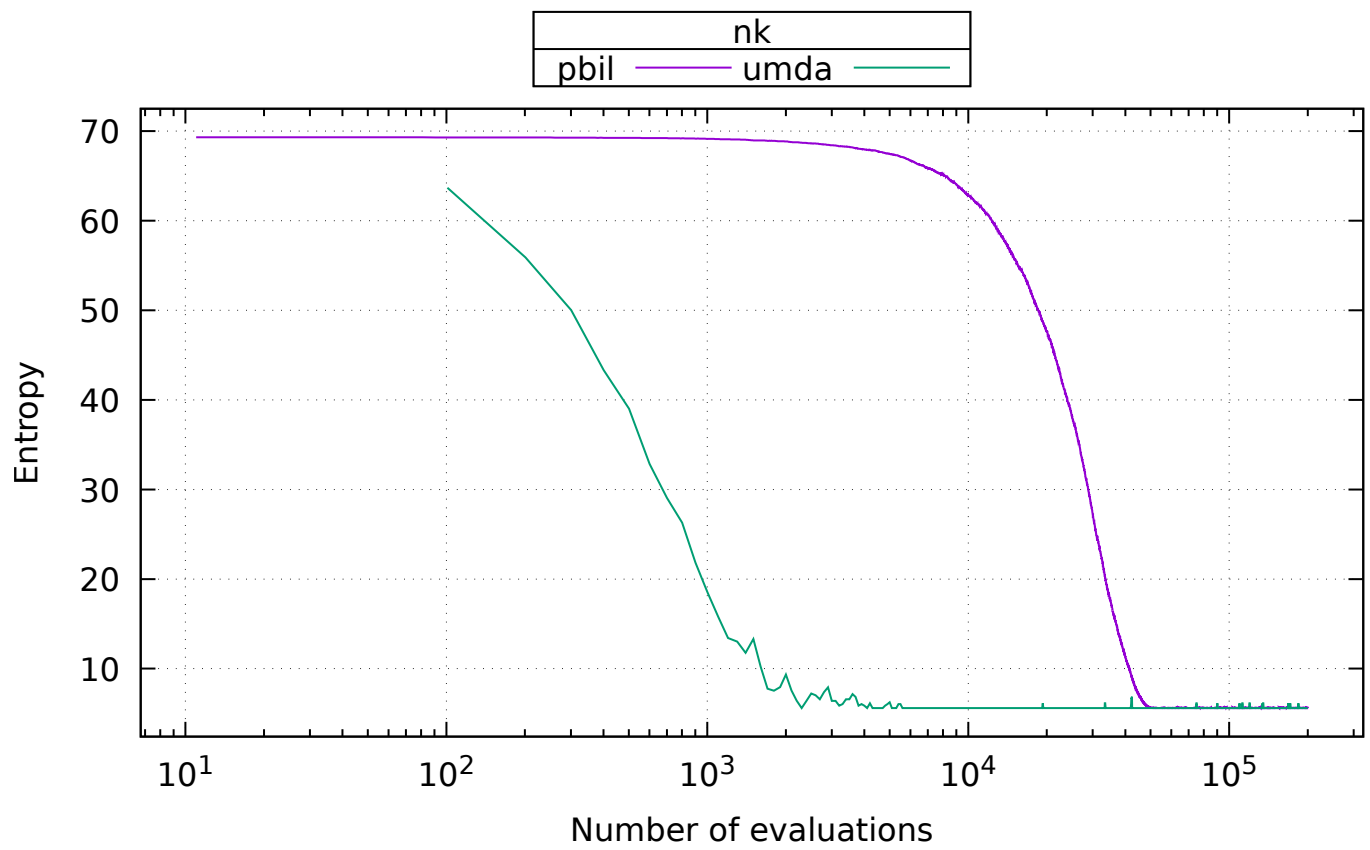
## 9 fp-5



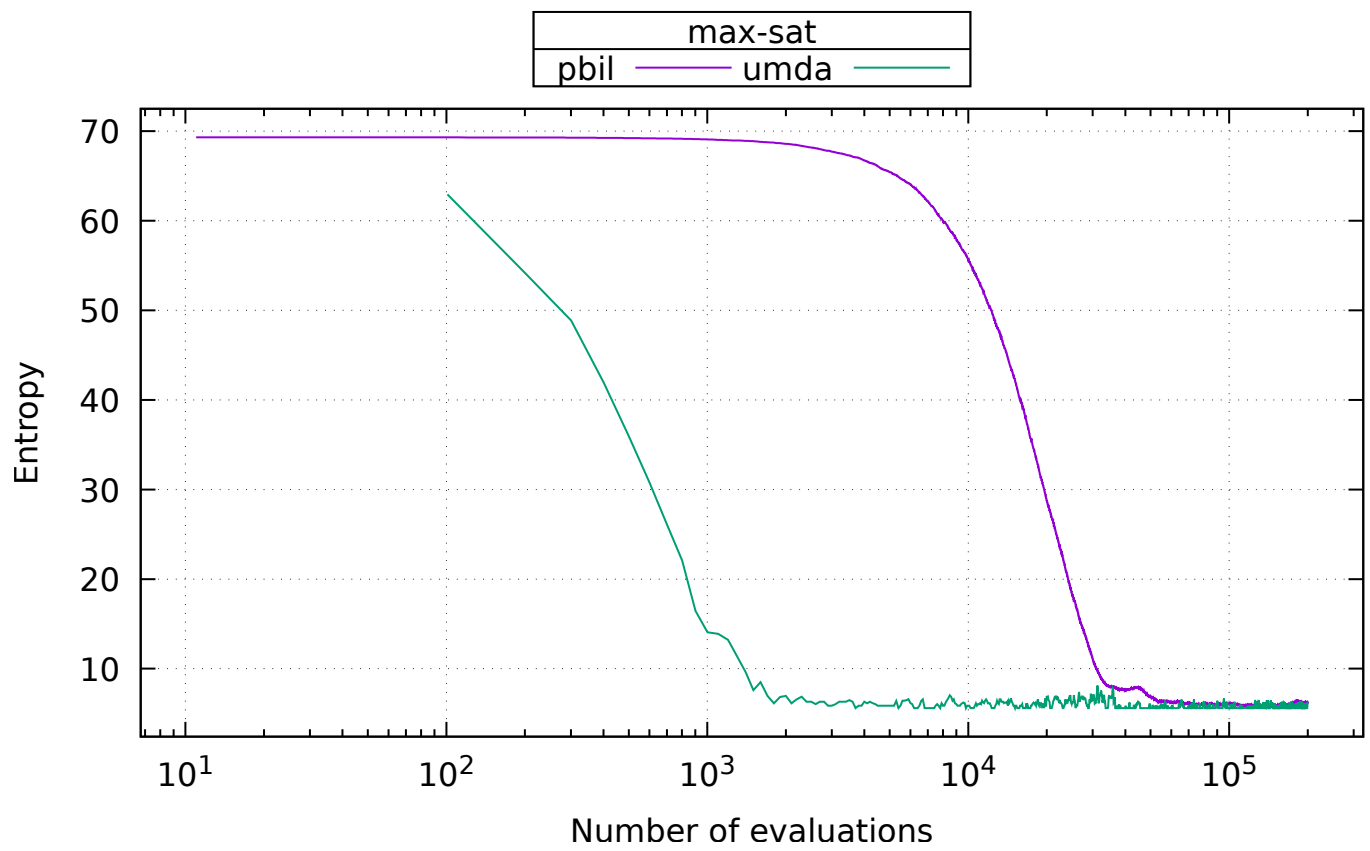
## 10 fp-10



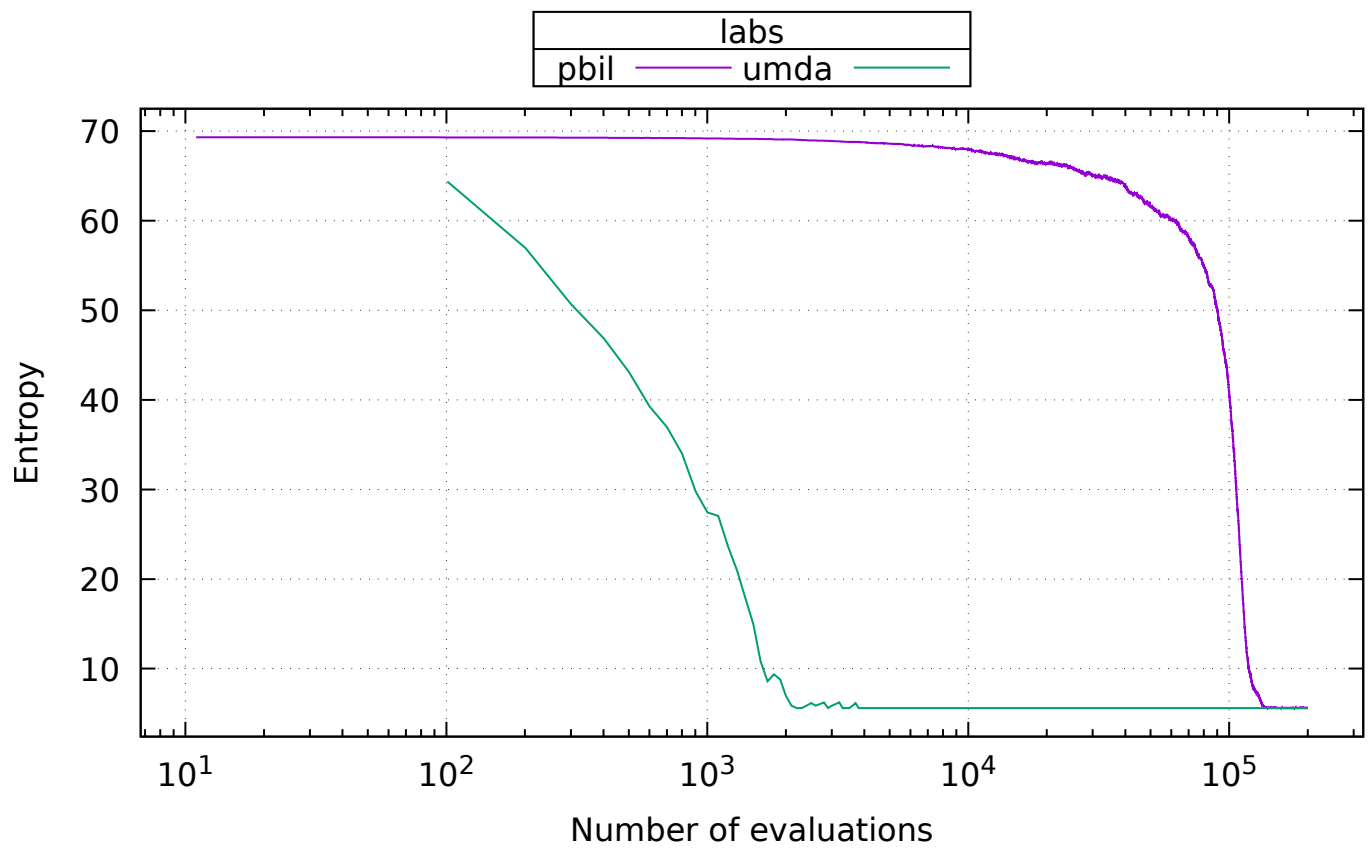
11 nk



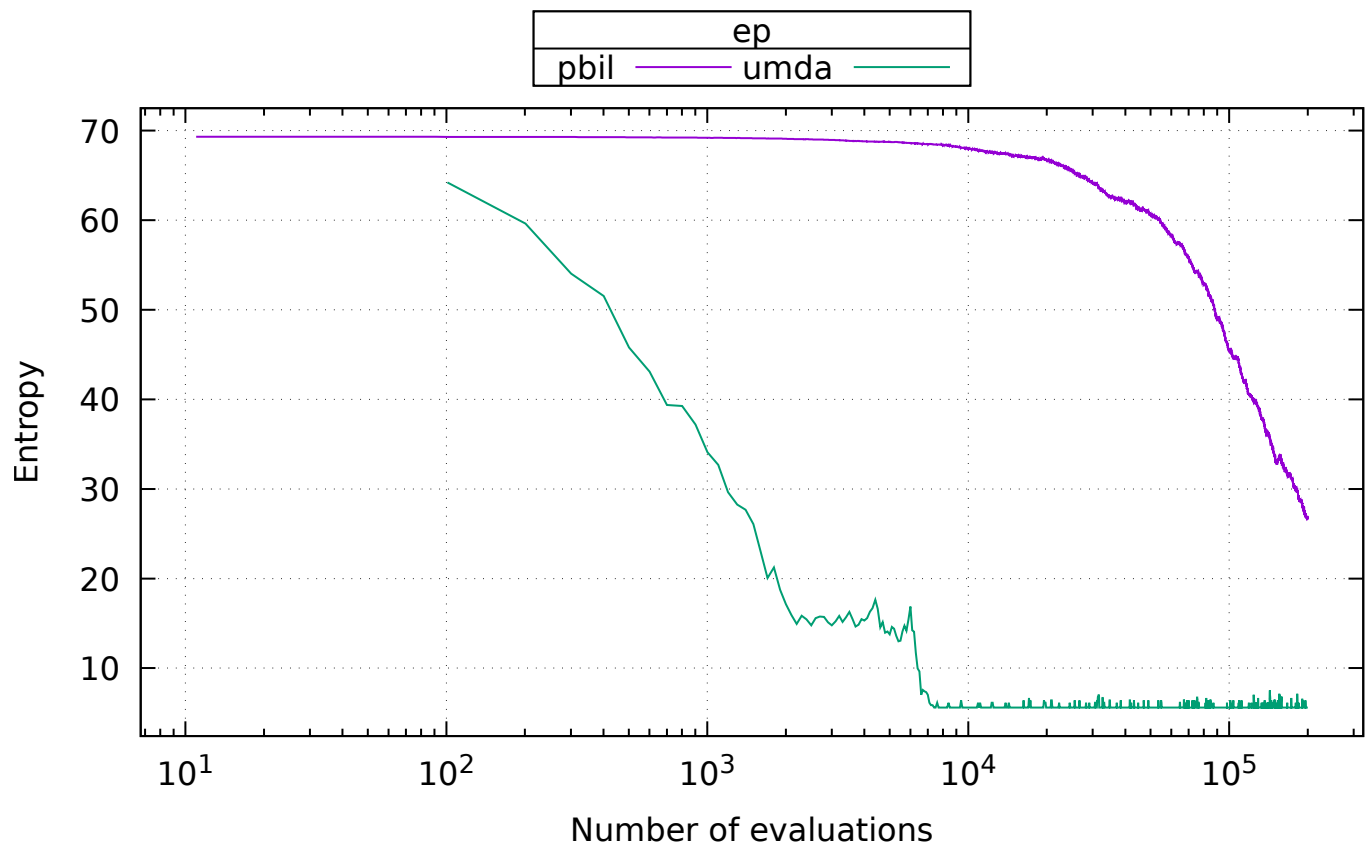
12 max-sat



13 labs

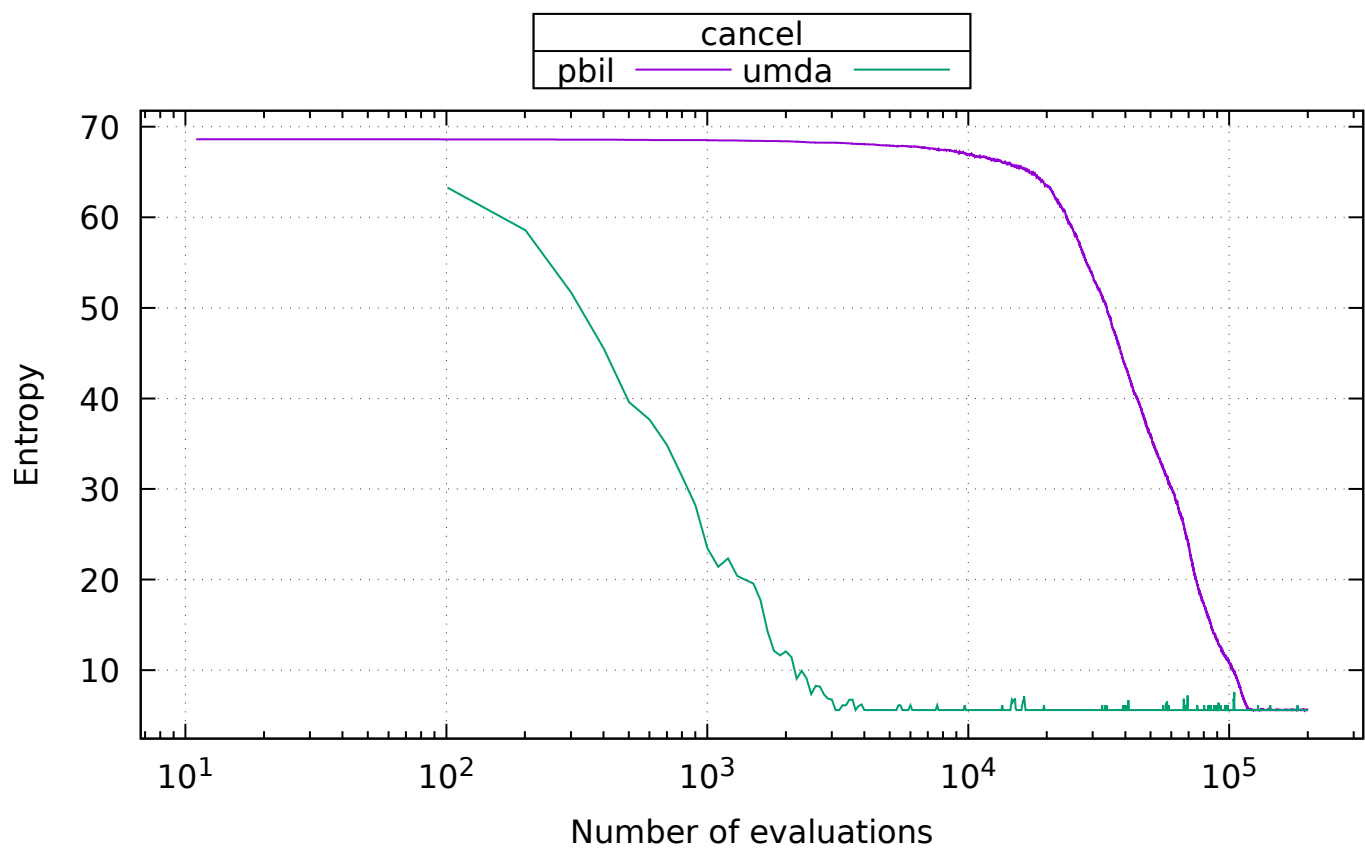


14 ep

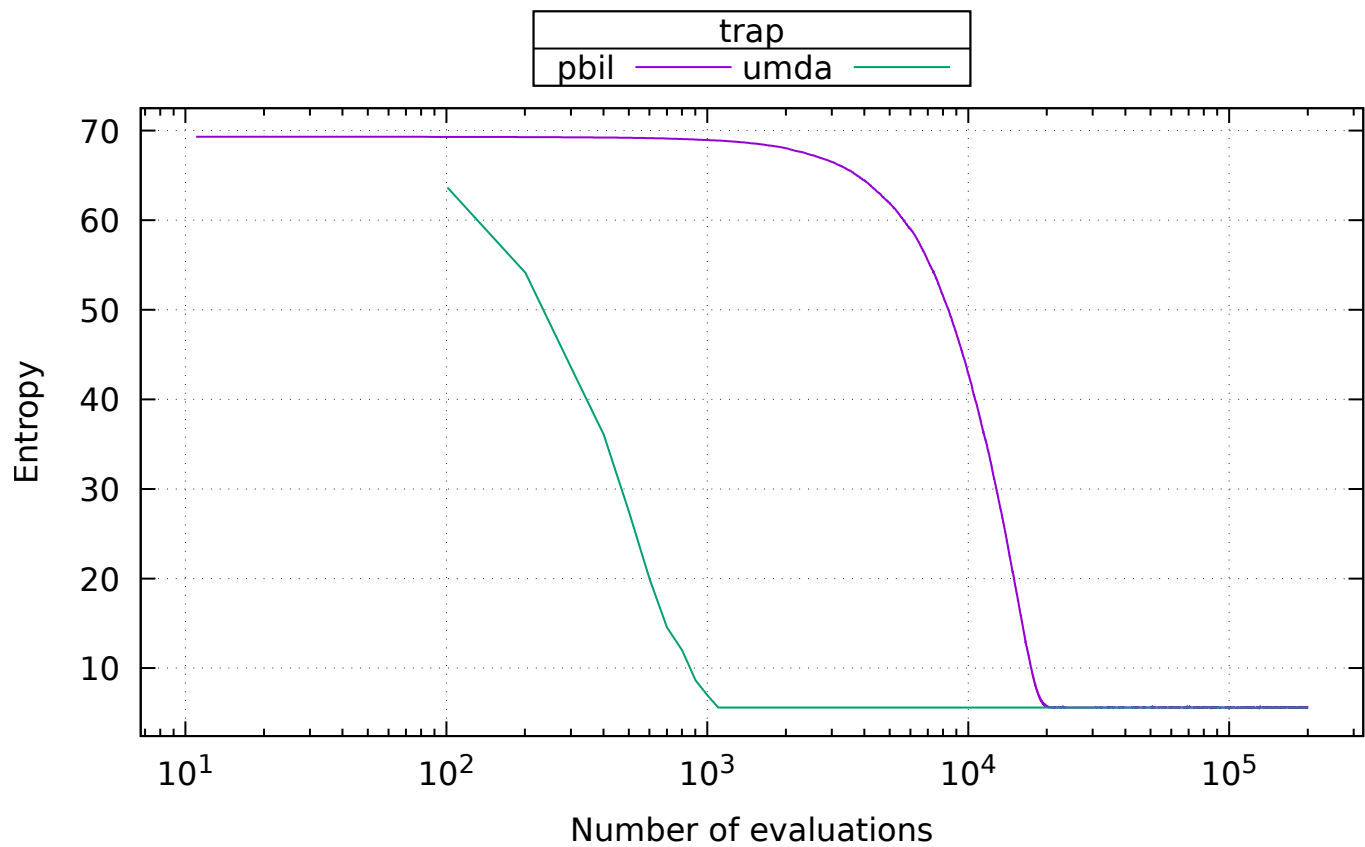




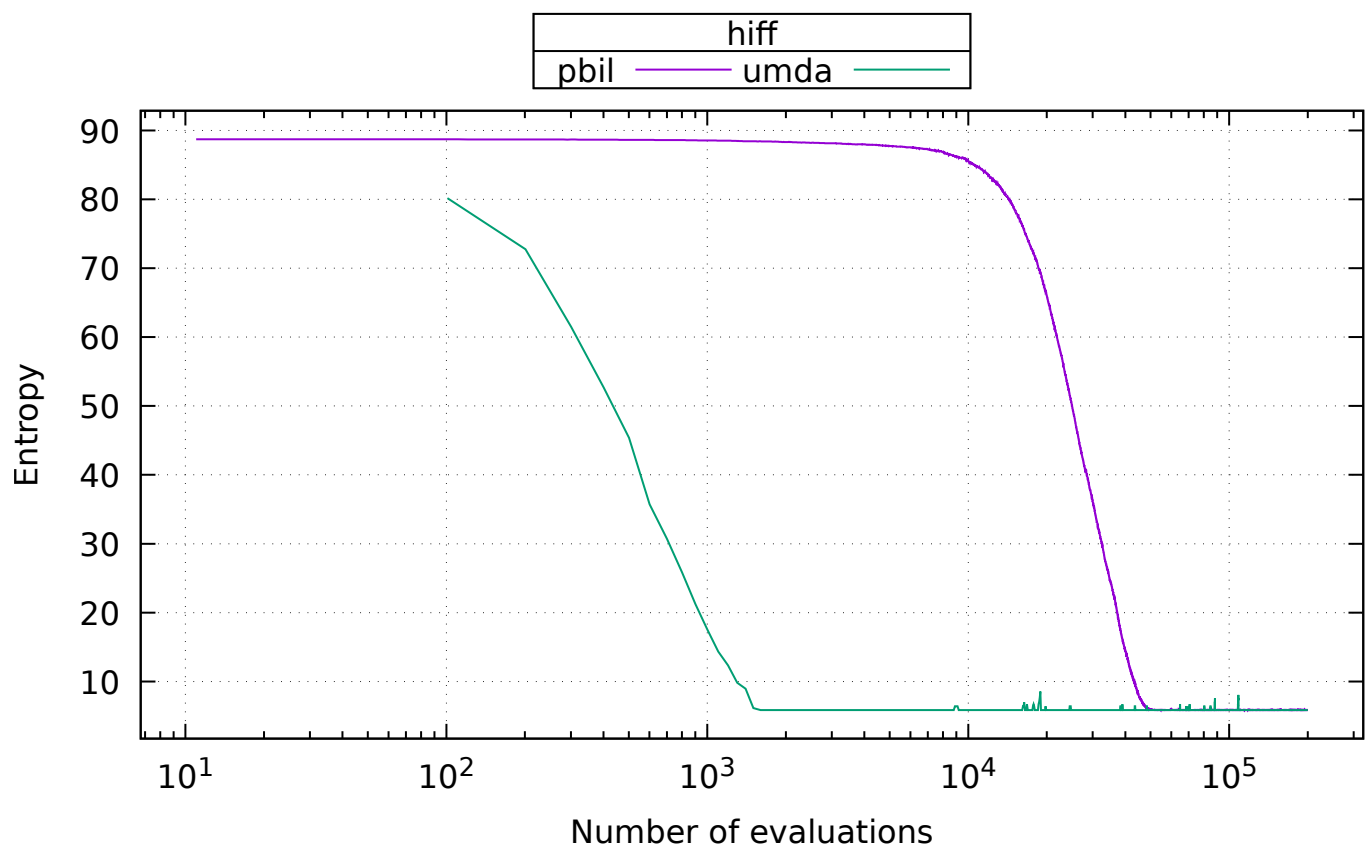
15 cancel



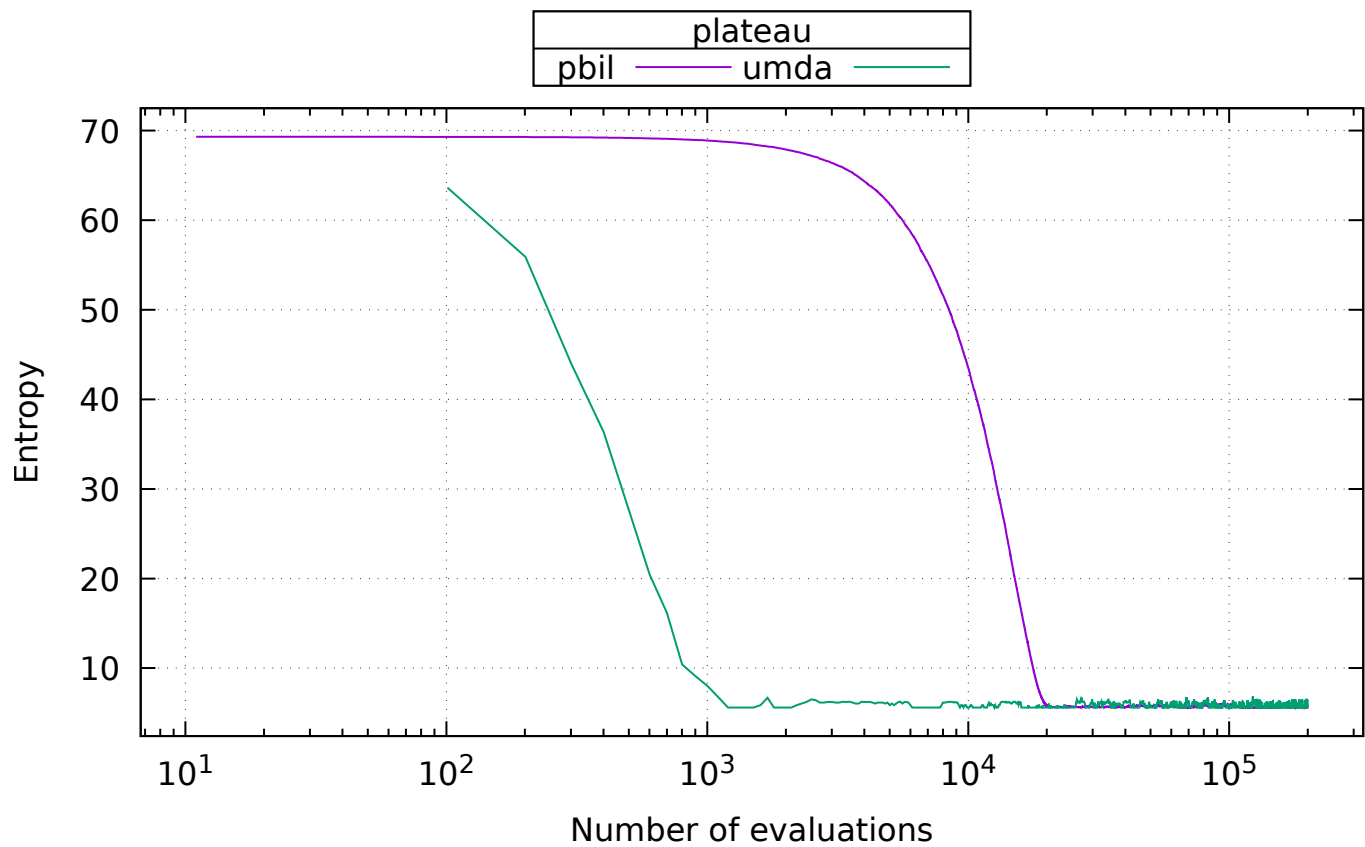
16 trap

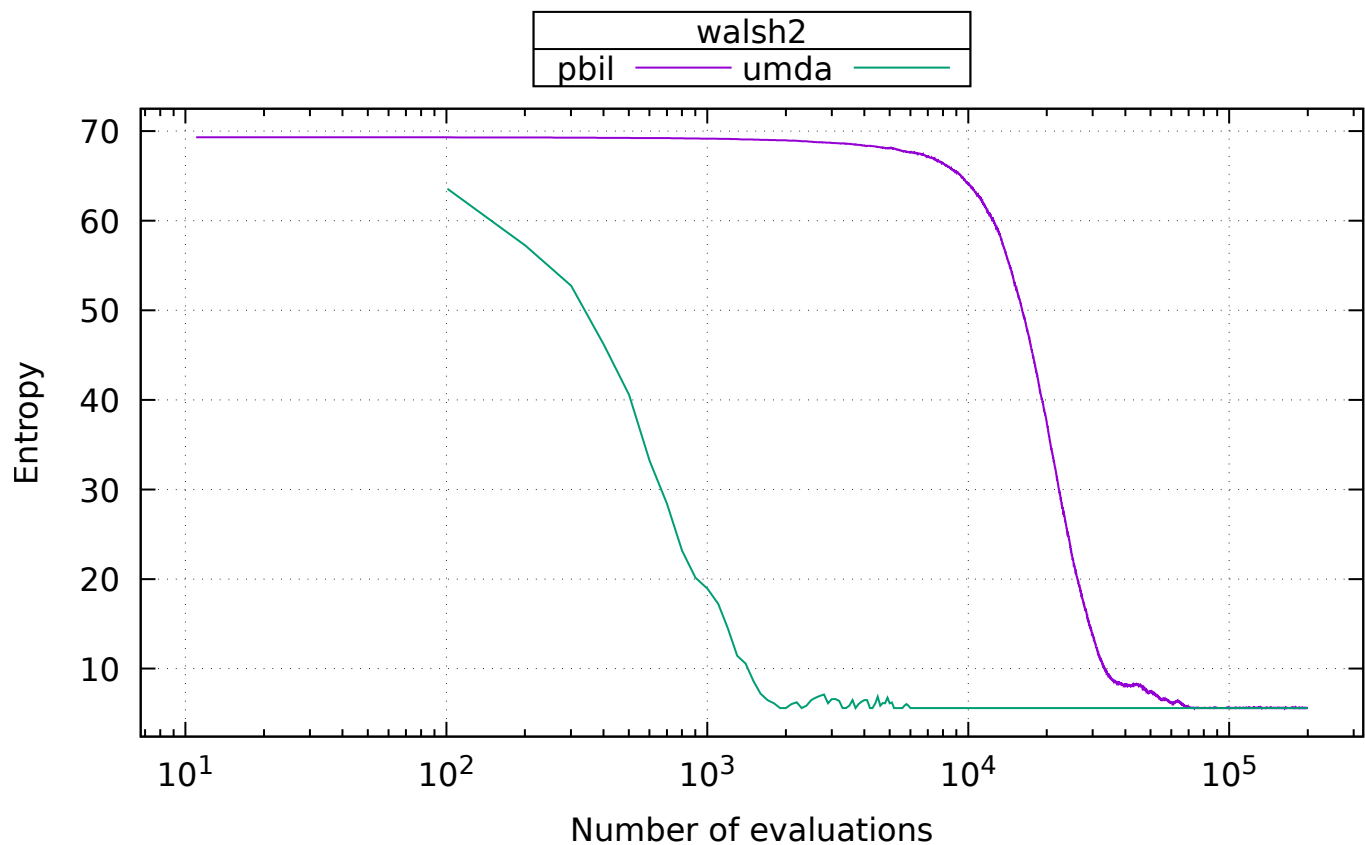


## 17 hiff



## 18 plateau





## A Plan

```
{
  "exec": "hnco",
  "opt": "--map 1 --map-random -s 100 -b 200001 --pv-log-entropy",
  "parallel": true,
  "results": "results",
  "graphics": "graphics",
  "report": "report",
  "xlabel": "Number of evaluations",
  "xcolumn": 1,
  "xlogscale": true,
  "ylabel": "Entropy",
  "ycolumn": 2,
  "ylogscale": false,
  "functions": [
    {
      "id": "one-max",
      "opt": "-F 0"
    },
    {
      "id": "lin",
      "opt": "-F 1 -p instances/lin.100"
    },
    {
      "id": "leading-ones",
      "opt": "-F 10"
    },
    {
      "id": "ridge",
      "opt": "-F 11"
    }
  ]
}
```

```

        "id": "jmp-5",
        "opt": "-F 30 -t 5"
    },
    {
        "id": "jmp-10",
        "opt": "-F 30 -t 10"
    },
    {
        "id": "djmp-5",
        "opt": "-F 31 -t 5"
    },
    {
        "id": "djmp-10",
        "opt": "-F 31 -t 10"
    },
    {
        "id": "fp-5",
        "opt": "-F 40 -t 5"
    },
    {
        "id": "fp-10",
        "opt": "-F 40 -t 10"
    },
    {
        "id": "nk",
        "opt": "-F 60 -p instances/nk.100.4"
    },
    {
        "id": "max-sat",
        "opt": "-F 70 -p instances/ms.100.3.1000"
    },
    {
        "id": "labs",
        "opt": "-F 81"
    },
    {
        "id": "ep",
        "opt": "-F 90 -p instances/ep.100"
    },
    {
        "id": "cancel",
        "opt": "-F 100 -s 99"
    },
    {
        "id": "trap",
        "opt": "-F 110 --fn-num-traps 10"
    },
    {
        "id": "hiff",
        "opt": "-F 120 -s 128"
    },
    {
        "id": "plateau",
        "opt": "-F 130"
    },
    {
        "id": "walsh2",
        "opt": "-F 162 -p instances/walsh2.100"
    }
},
"algorithms": [
    {
        "id": "pbil",

```

```

        "opt": "-A 500 -x 10 -y 1 -l 5e-3"
    },
    {
        "id": "umda",
        "opt": "-A 600 -x 100 -y 10"
    }
]
}

```

## B Default parameters

```

# algorithm = 100
# bm_mc_reset_strategy = 1
# bm_num_gs_cycles = 1
# bm_num_gs_steps = 100
# bm_sampling = 1
# budget = 10000
# bv_size = 100
# description_path = description.txt
# ea_lambda = 100
# ea_mu = 10
# expression = x
# fn_name = noname
# fn_num_traps = 10
# fn_prefix_length = 2
# fn_threshold = 10
# fp_expression = (1-x)^2+100*(y-x^2)^2
# fp_lower_bound = -2
# fp_num_bits = 8
# fp_upper_bound = 2
# function = 0
# ga_crossover_bias = 0.5
# ga_crossover_probability = 0.5
# ga_tournament_size = 10
# hea_bit_herding = 0
# hea_num_seq_updates = 100
# hea_reset_period = 0
# hea_sampling_method = 0
# hea_weight = 1
# learning_rate = 0.001
# map = 0
# map_input_size = 100
# map_path = map.txt
# map_ts_length = 10
# map_ts_sampling_mode = 0
# mutation_rate = 1
# neighborhood = 0
# neighborhood_iterator = 0
# noise_stddev = 1
# num_iterations = 0
# num_threads = 1
# path = function.txt
# pn_mutation_rate = 1
# pn_neighborhood = 0
# pn_radius = 2
# population_size = 10
# pv_log_num_components = 5
# radius = 2
# results_path = results.json
# rls_patience = 50
# sa_beta_ratio = 1.2
# sa_initial_acceptance_probability = 0.6

```

```
# sa_num_transitions = 50
# sa_num_trials = 100
# seed = 0
# selection_size = 1
# solution_path = solution.txt
# target = 100
# print_defaults
# last_parameter
# exec_name = hnco
# version = 0.15
# Generated from hnco.json
```