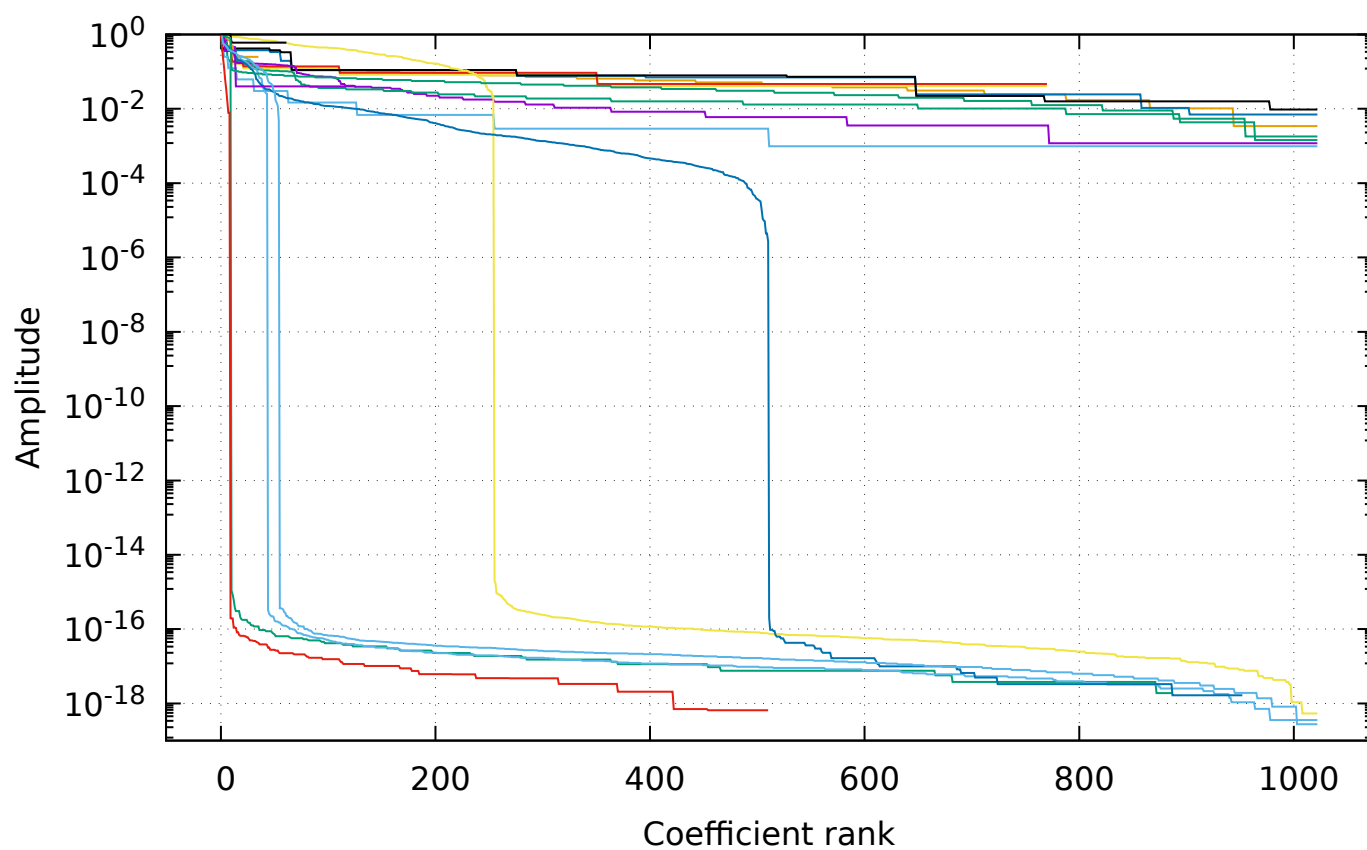# HNCO
# Visualization of Walsh transforms
# of various functions defined on bit vectors

June 27, 2018
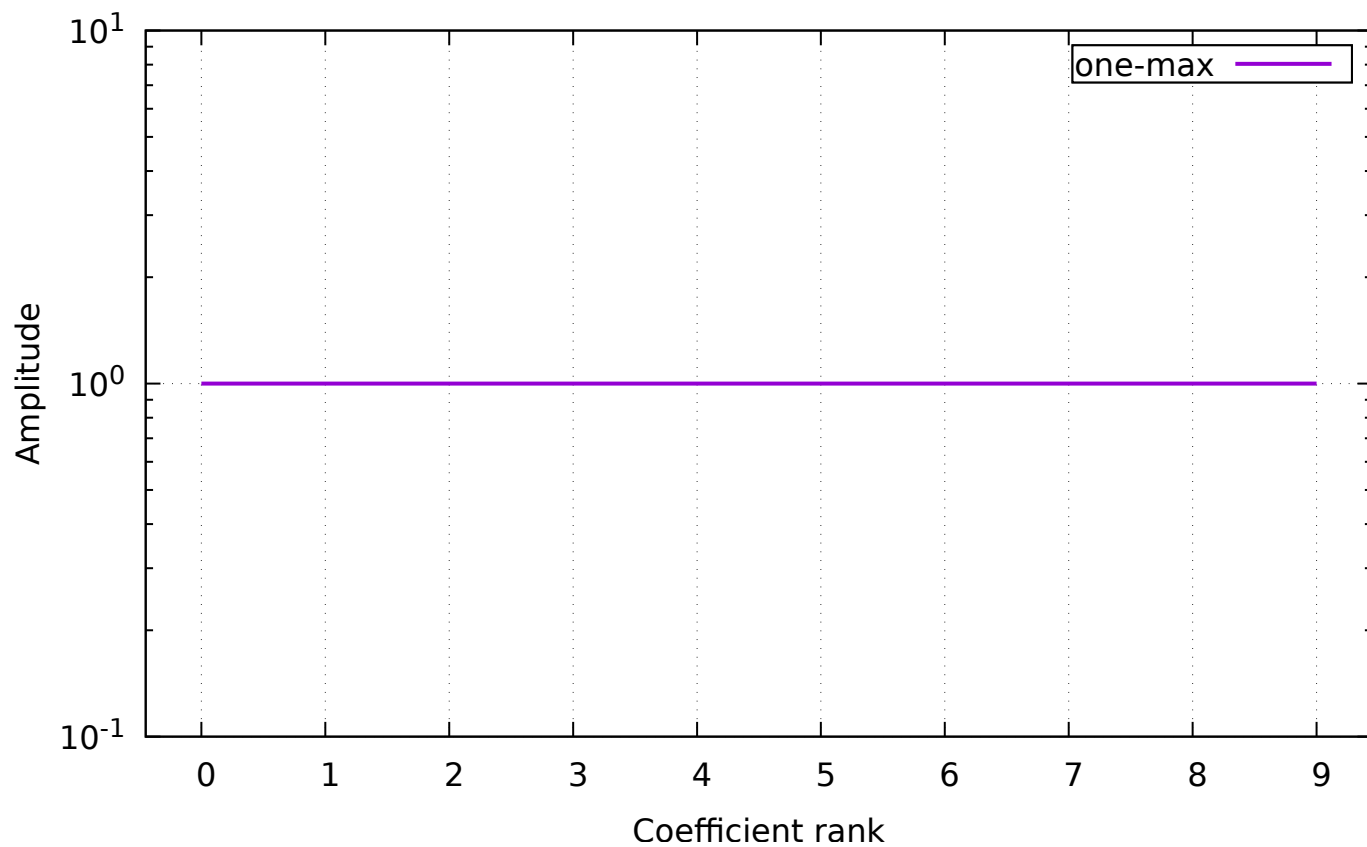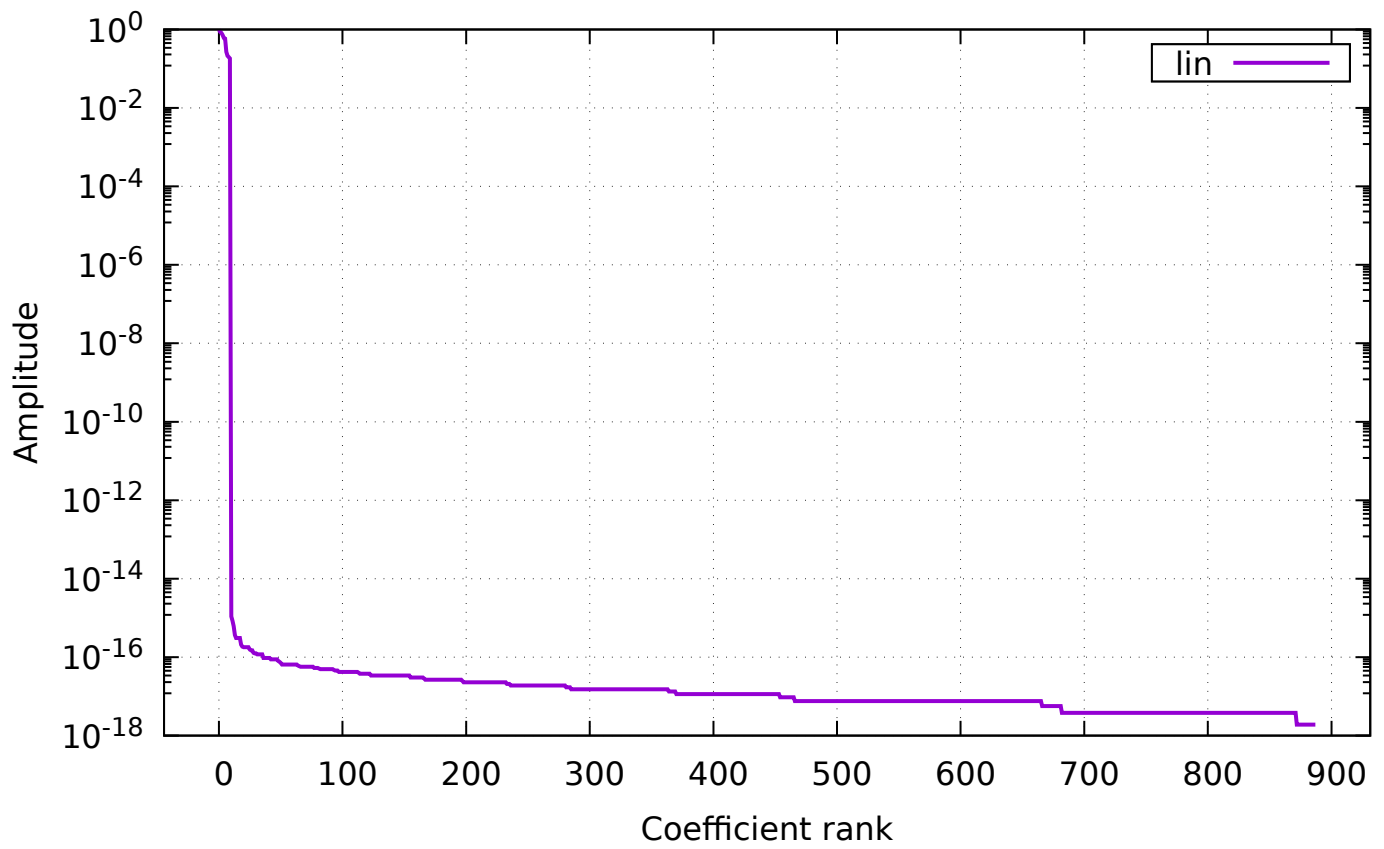
# Contents

# 1 All functions
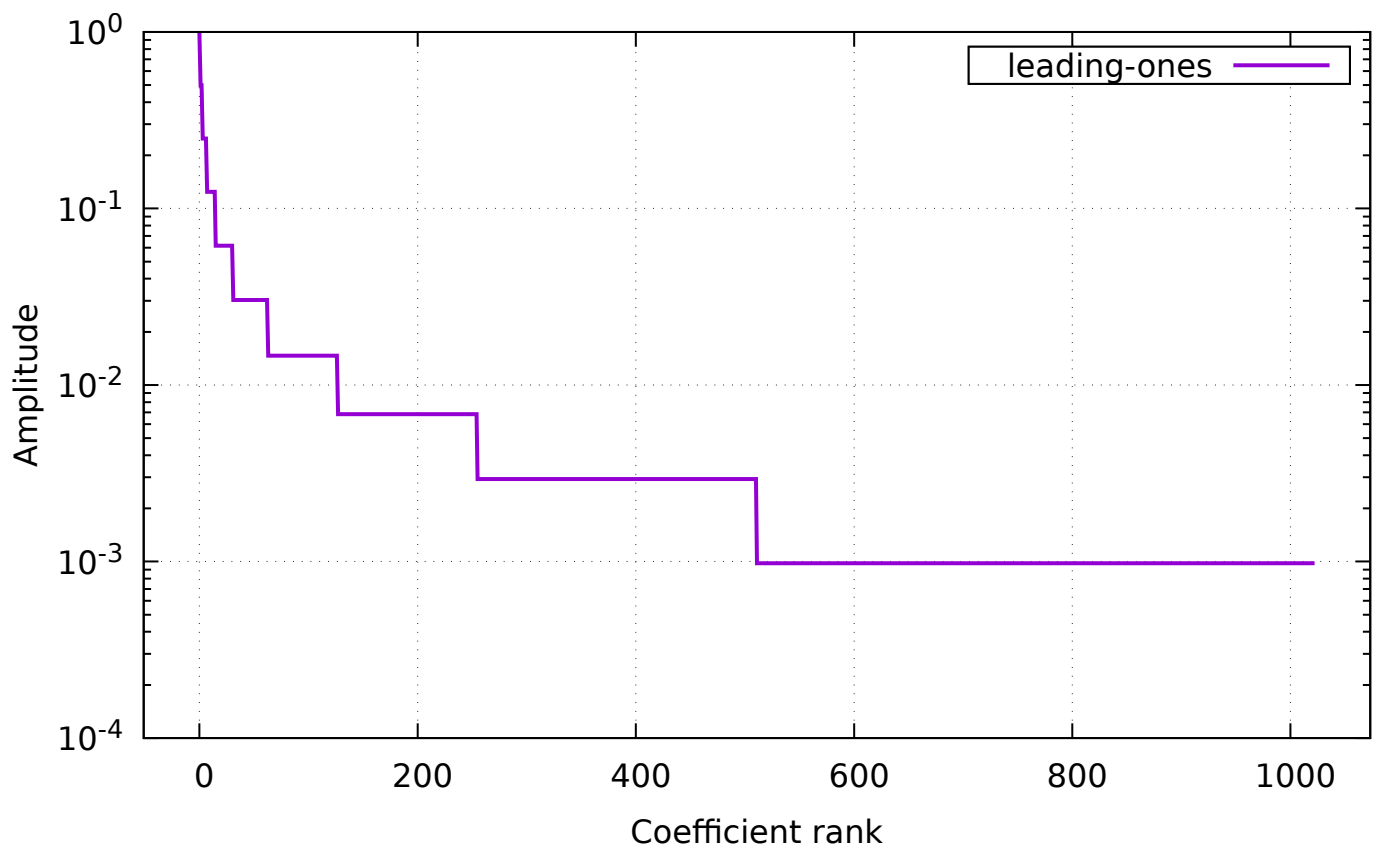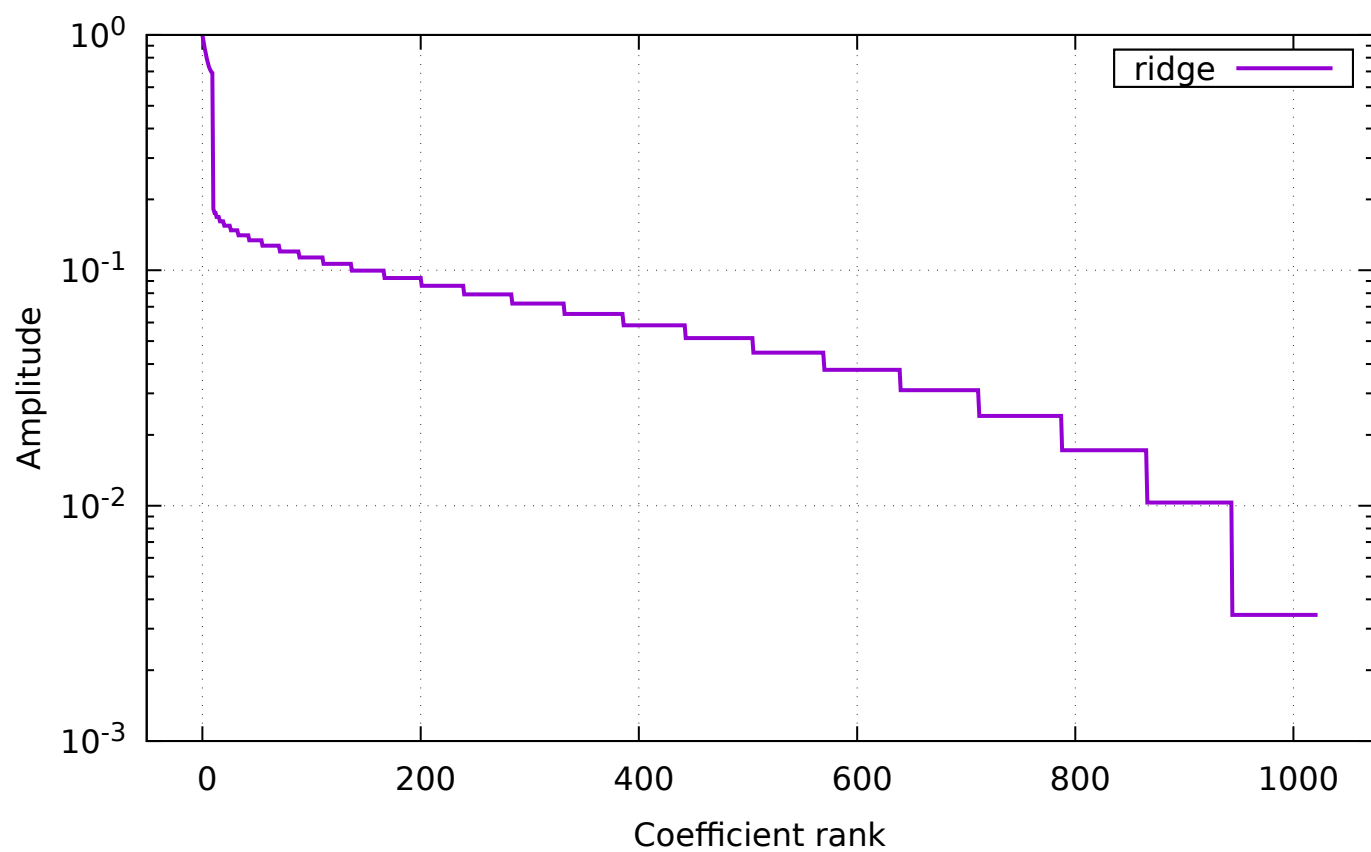


# 2 one-max

## 3   lin



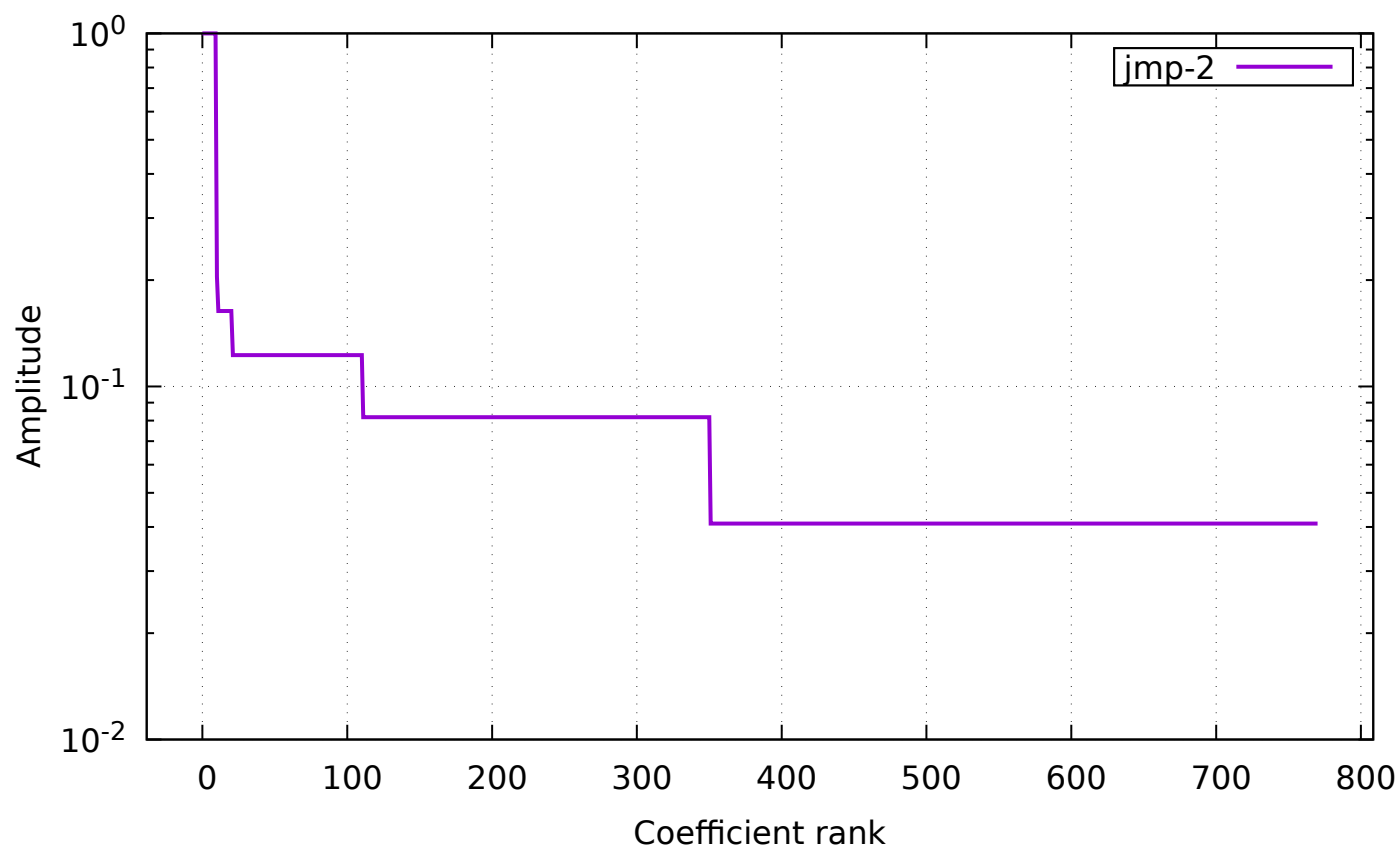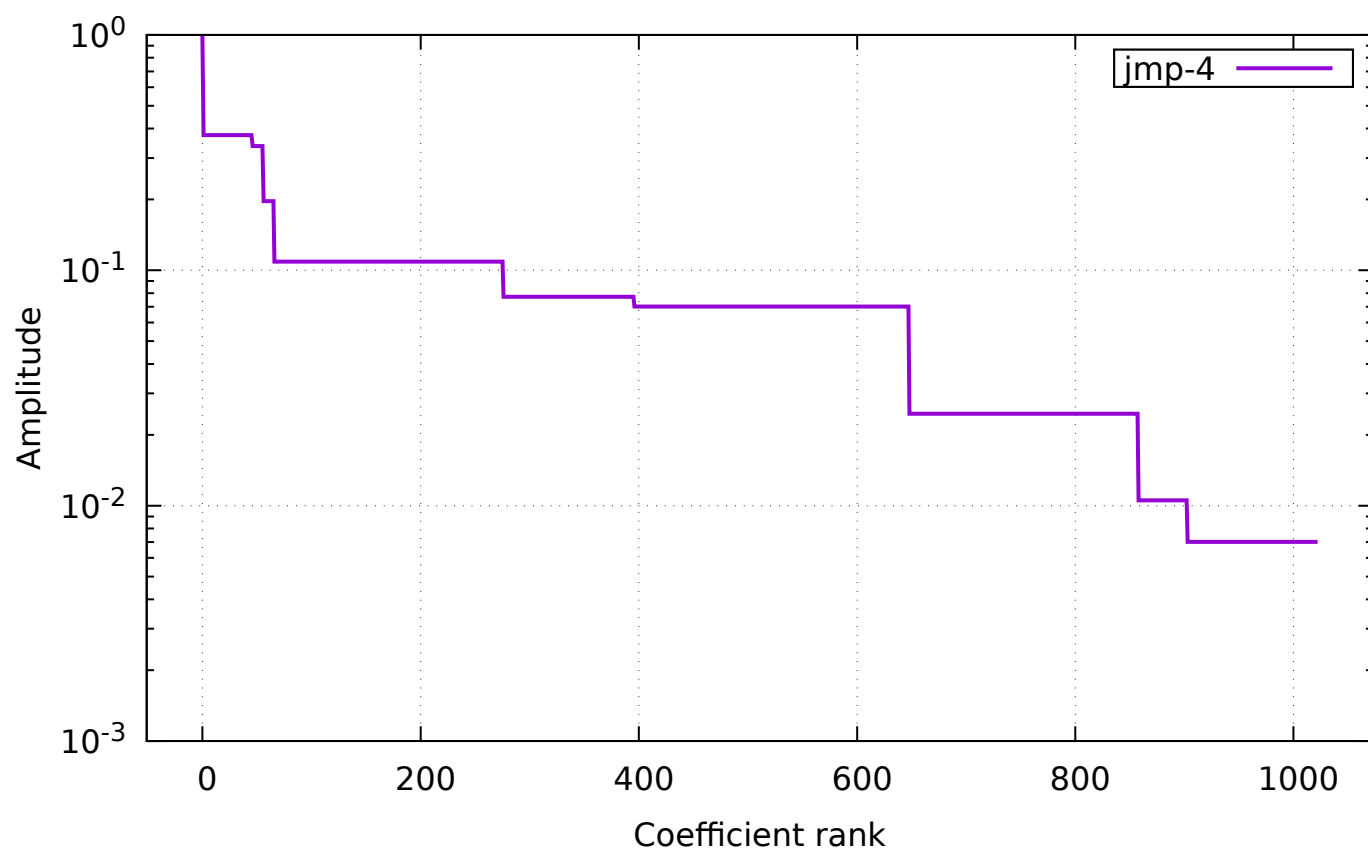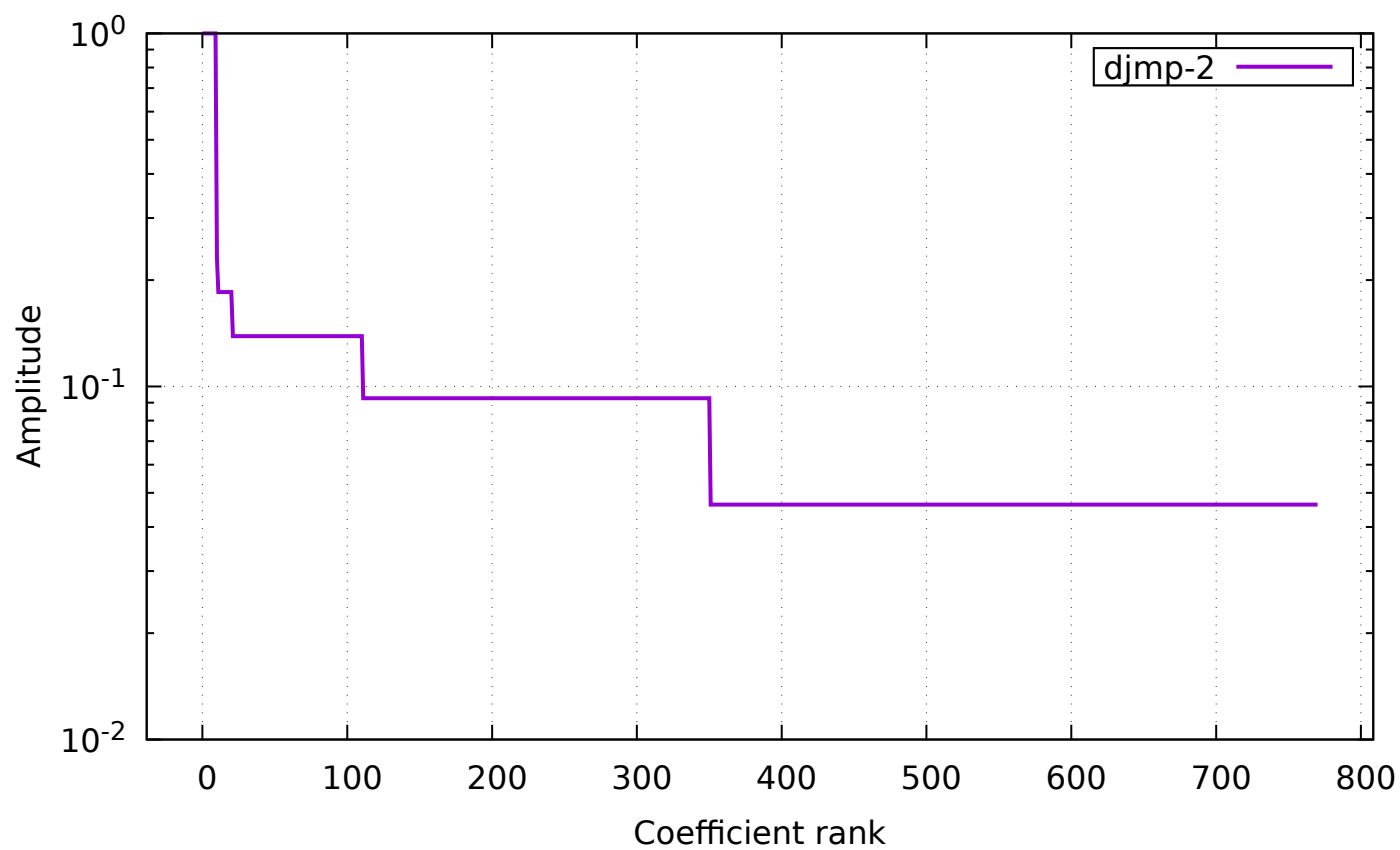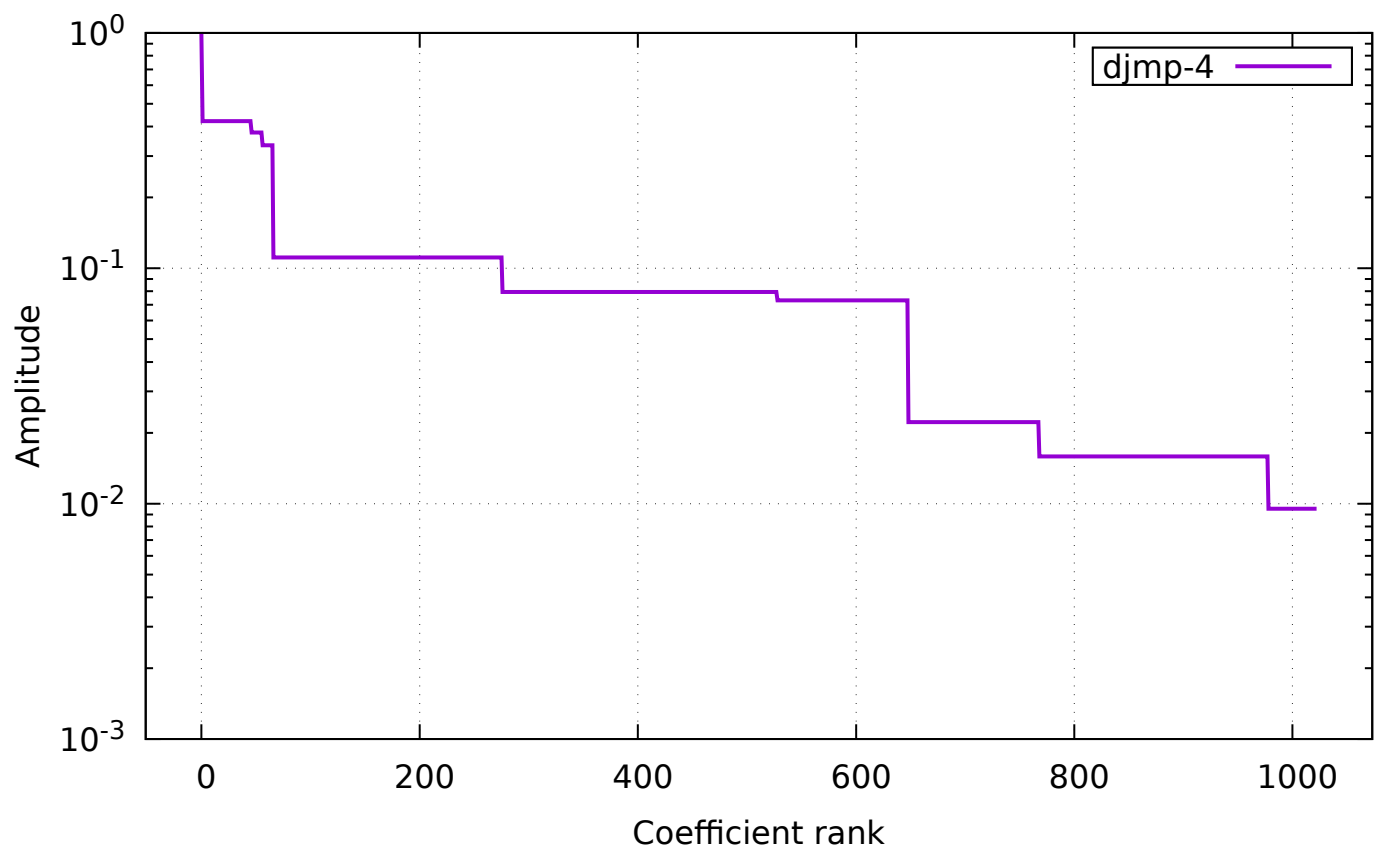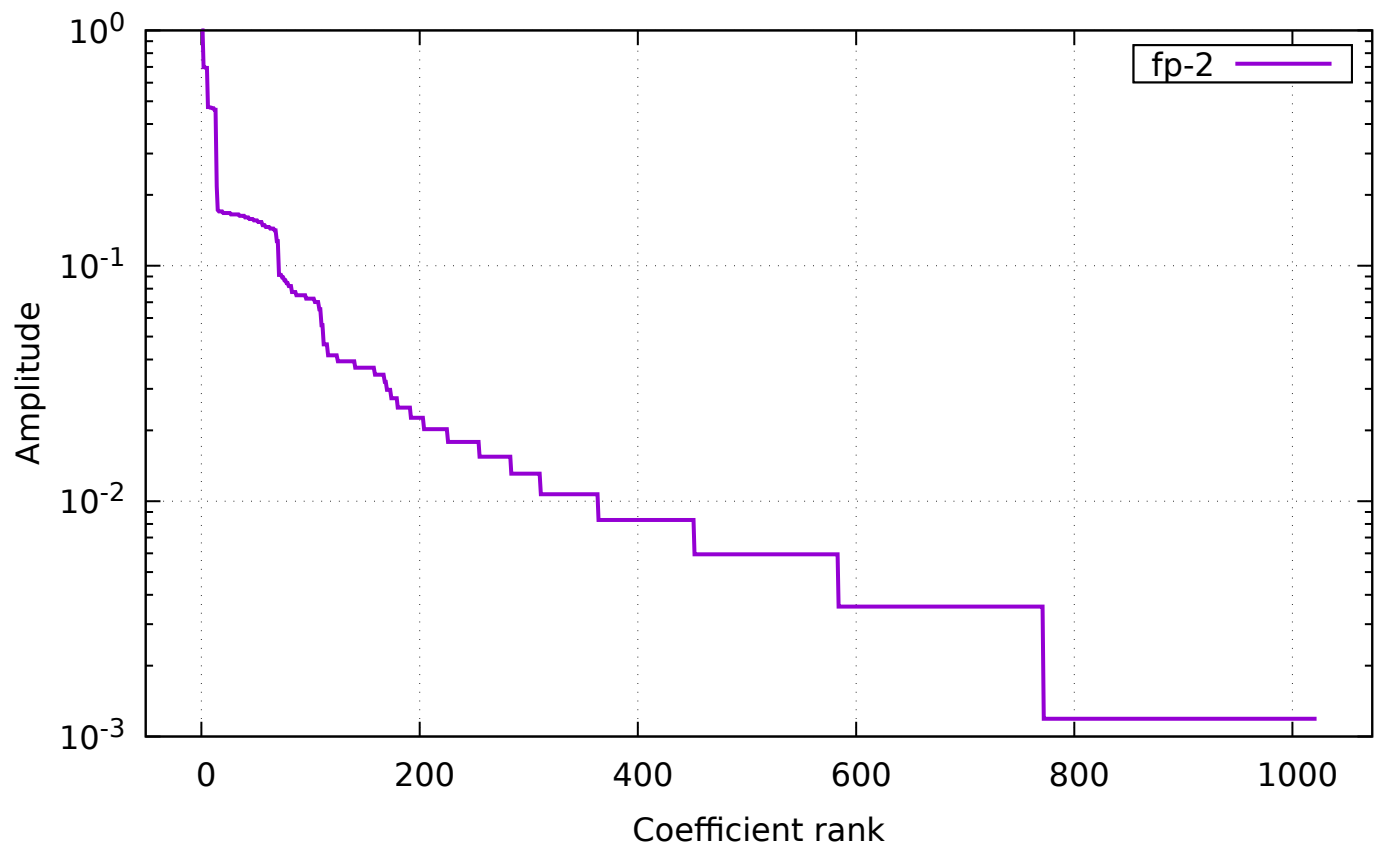## 4   leading-ones

# 5   ridge
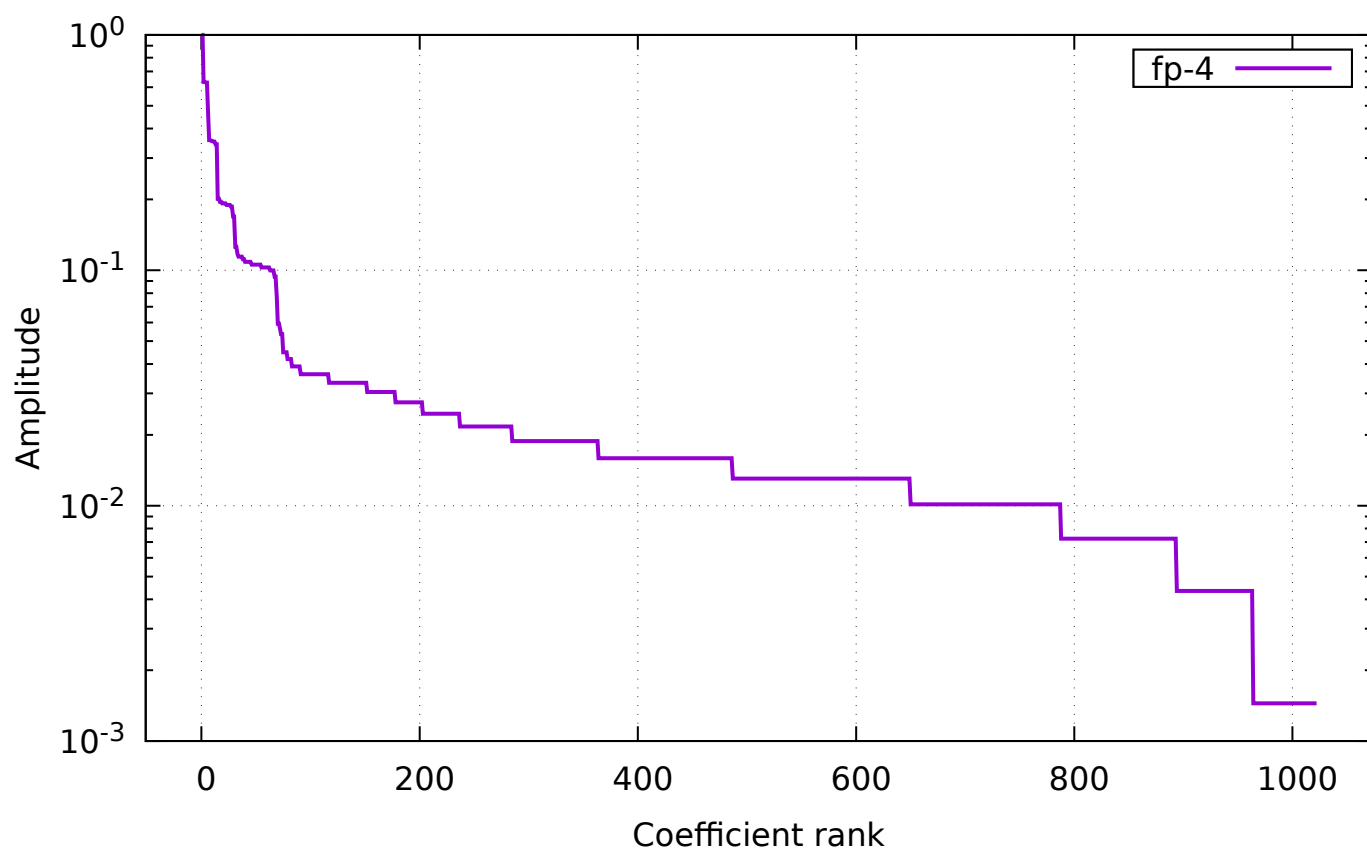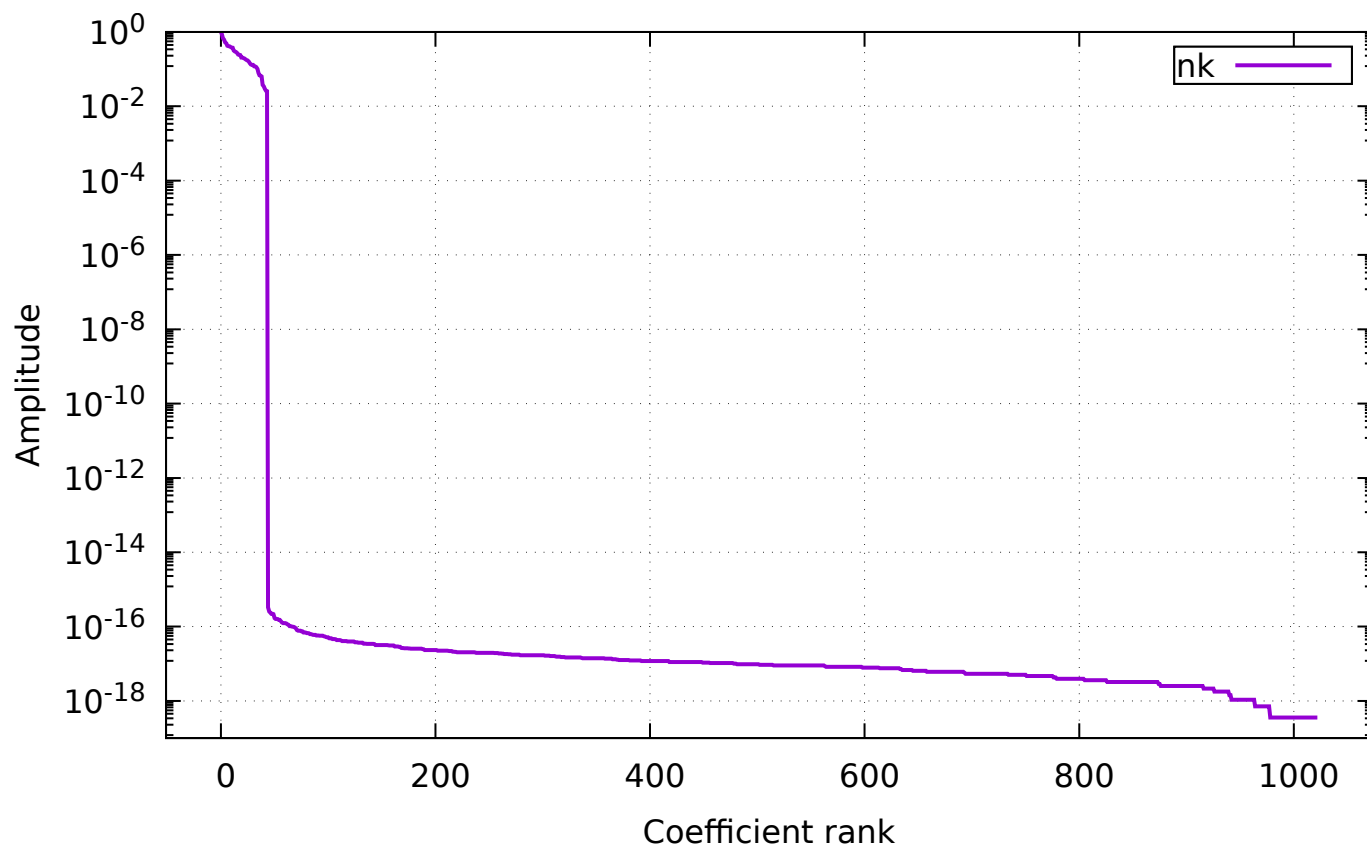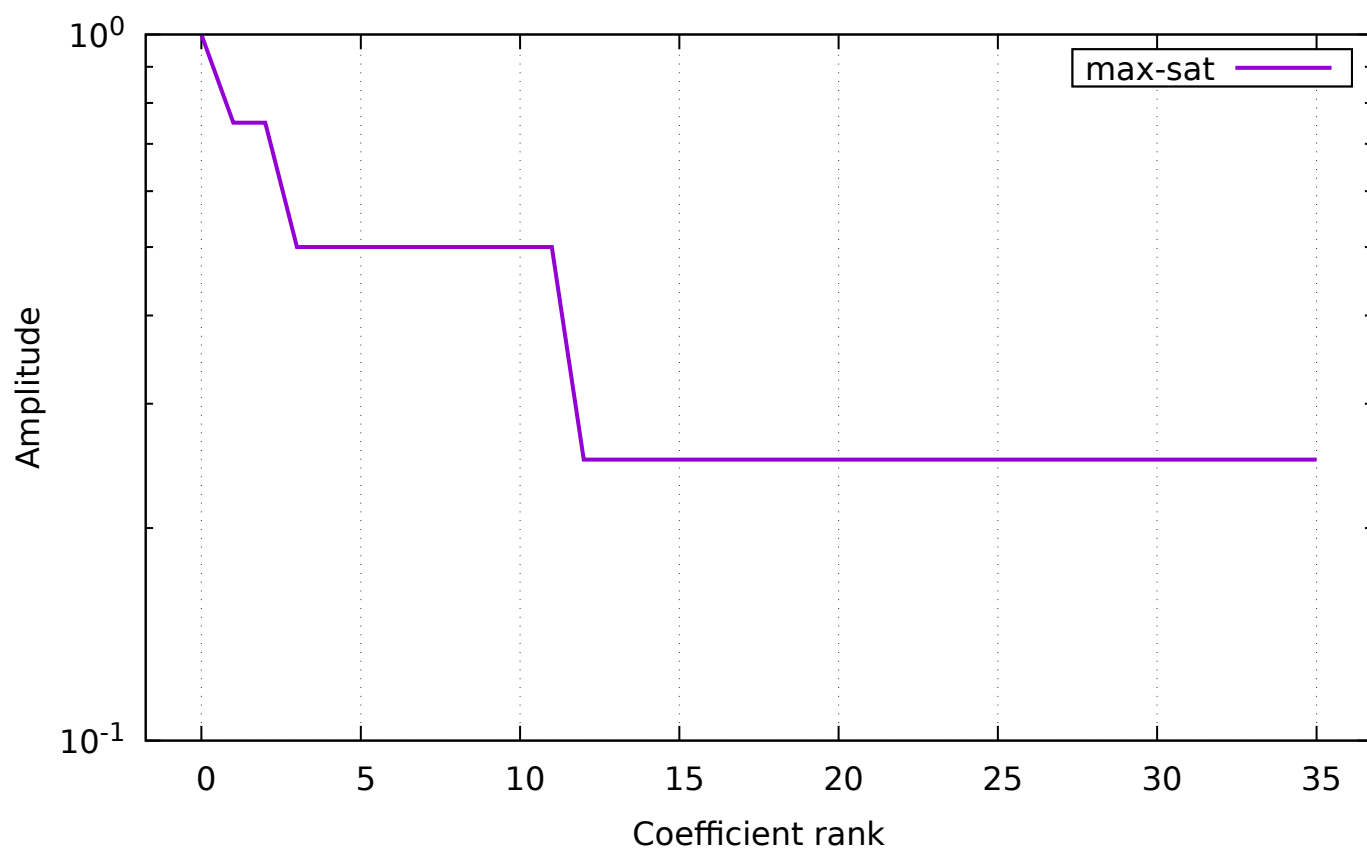


# 6   jmp-2

## 7   jmp-4
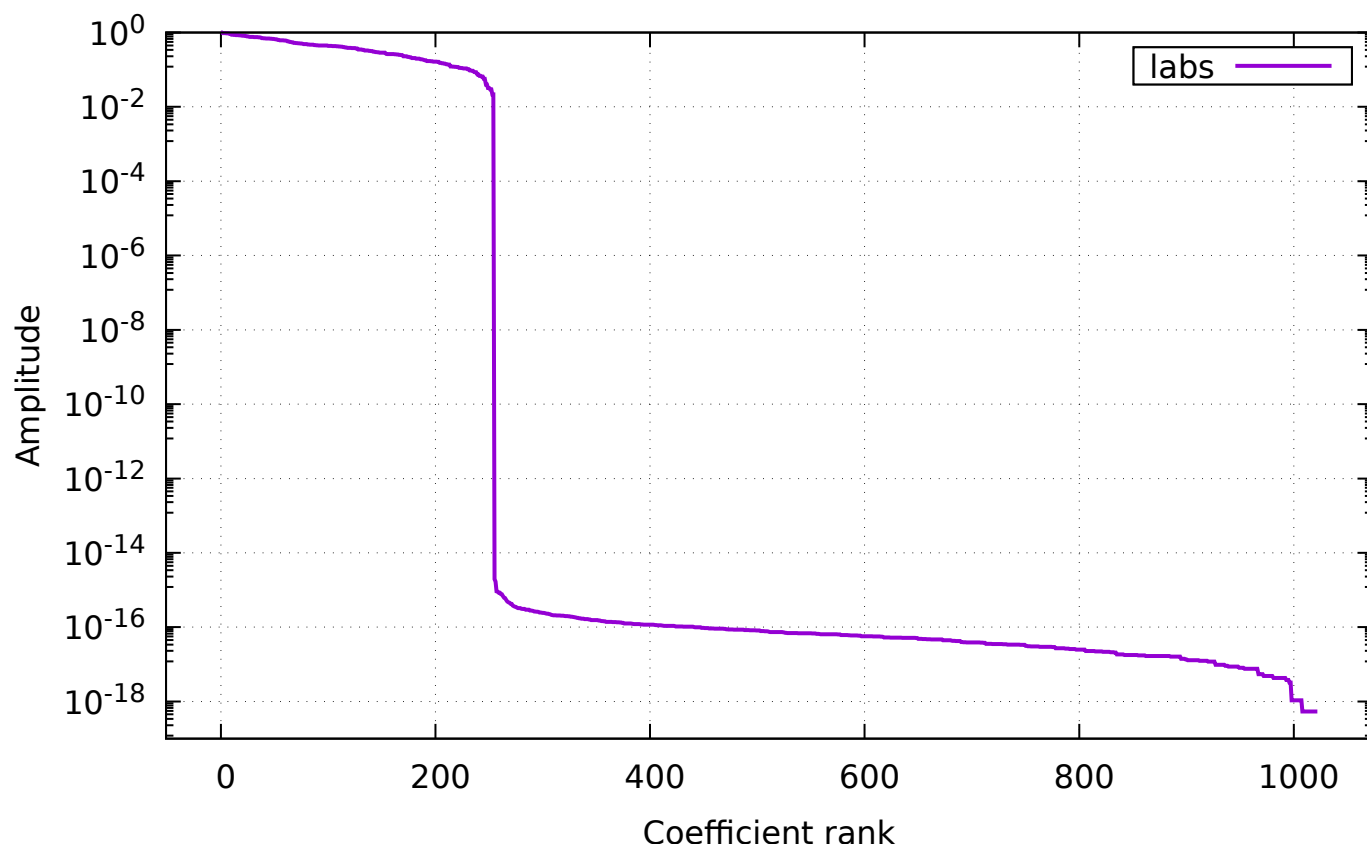


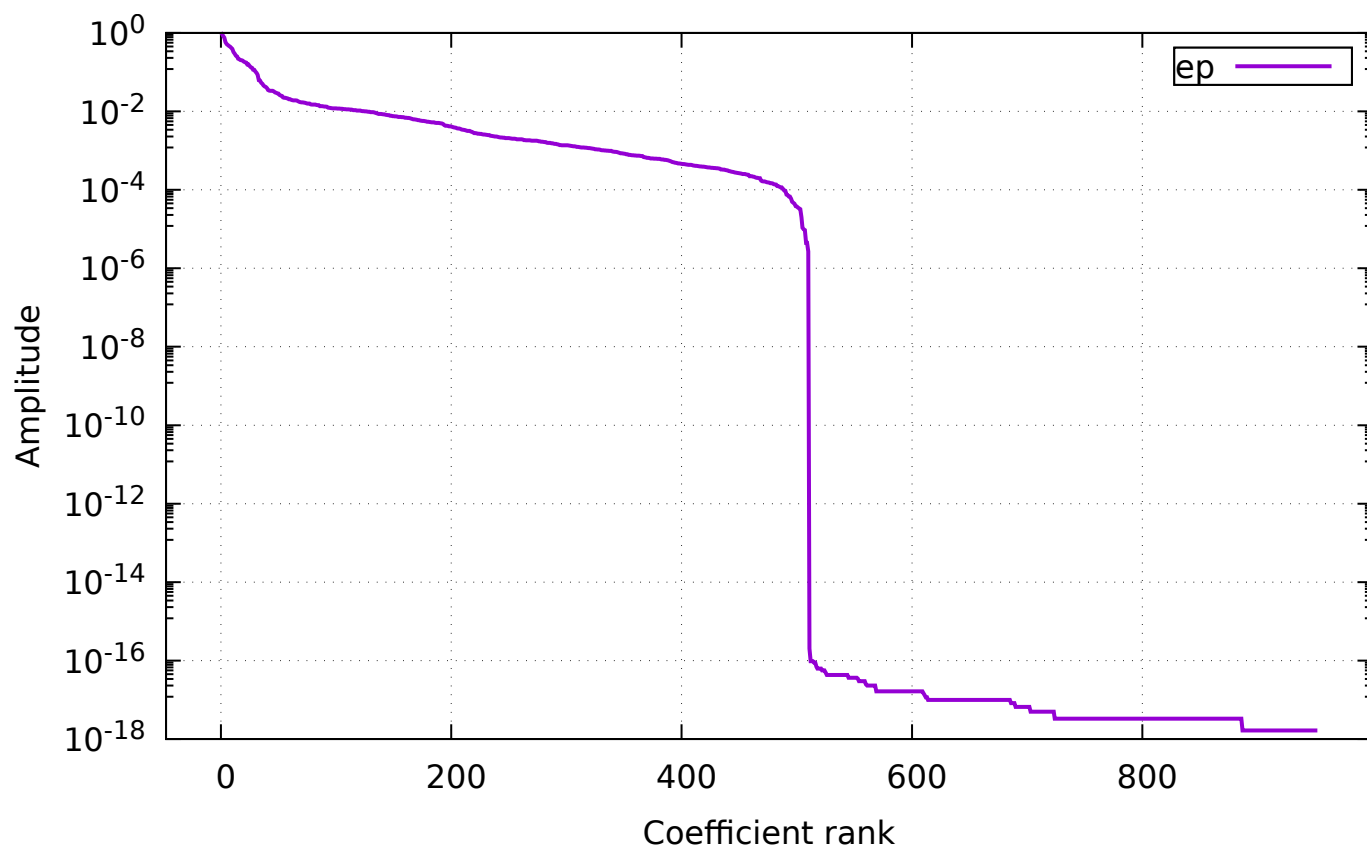## 8   djmp-2

## 9 djmp-4



## 10 fp-2

## 11    fp-4



## 12    nk

## 13 max-sat



## 14 labs

## 15 ep



## 16 cancel
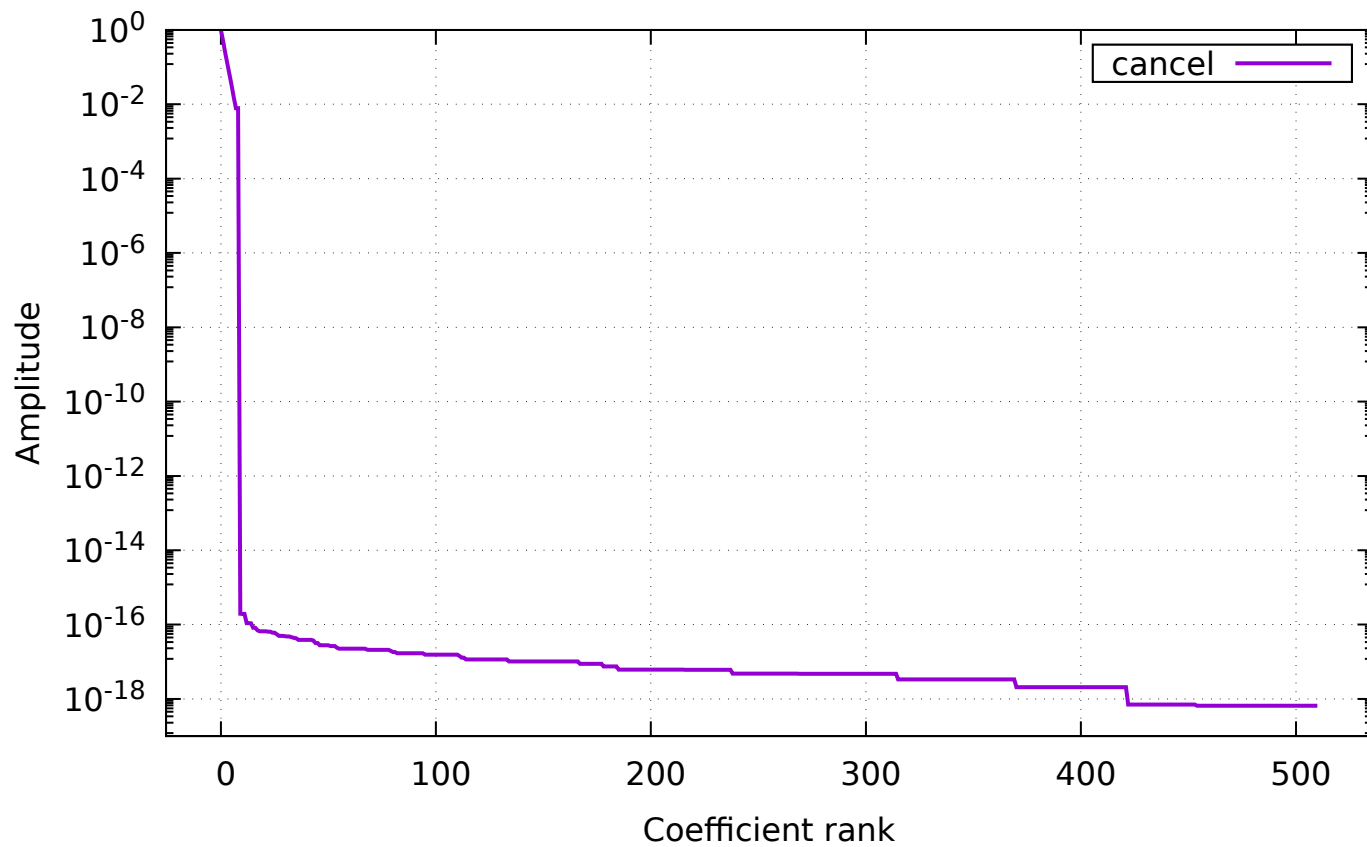
## 17 trap
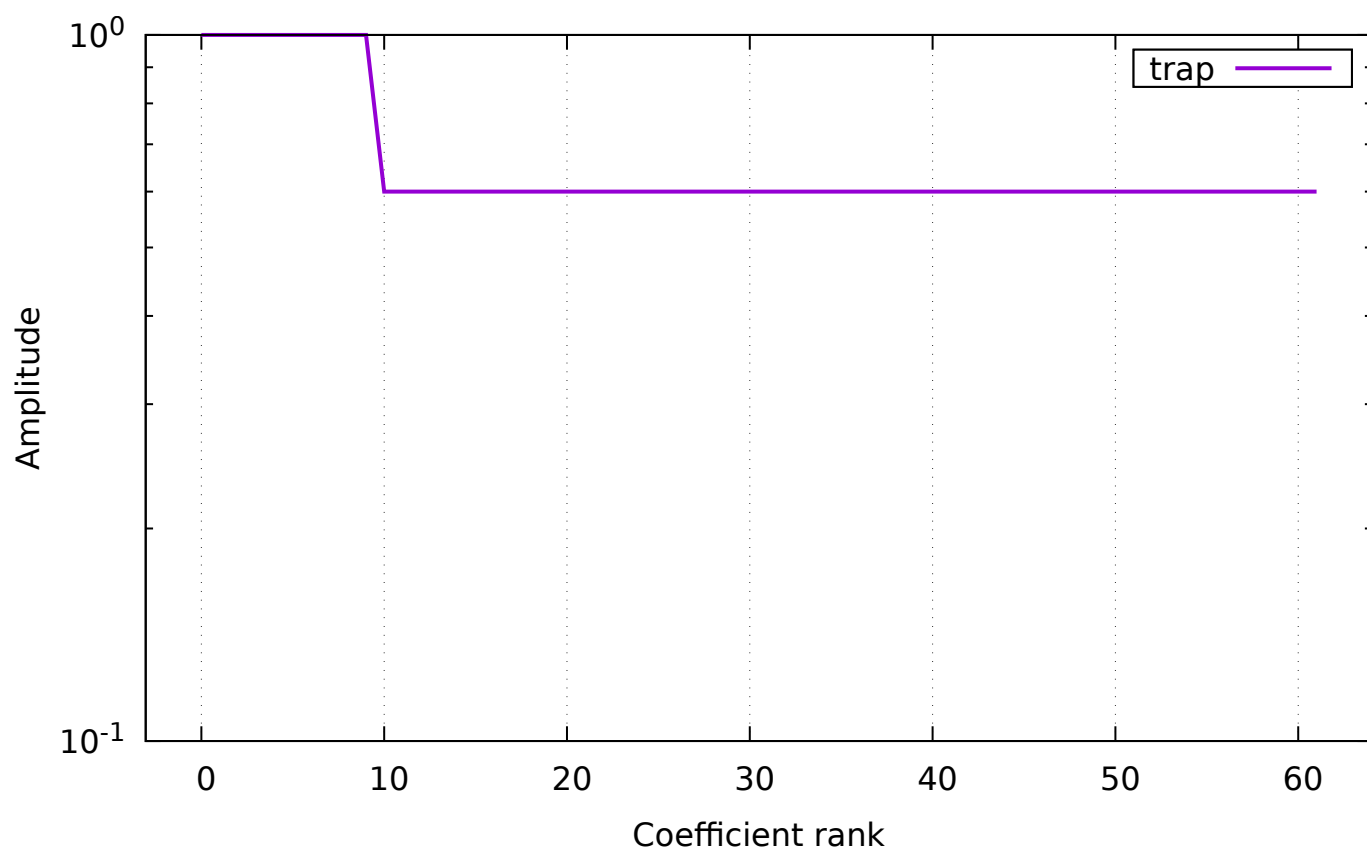


## 18 hiff
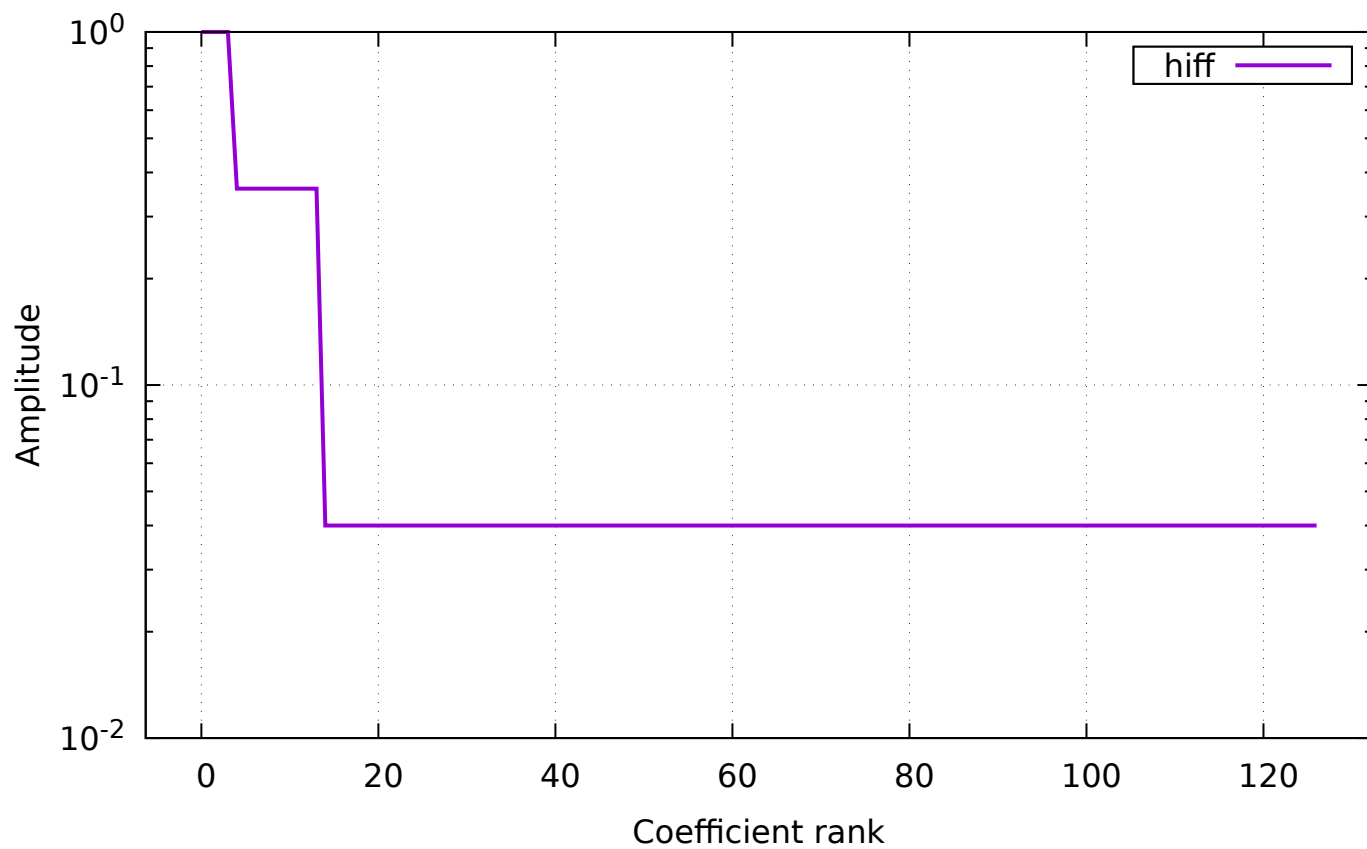
## 19 plateau
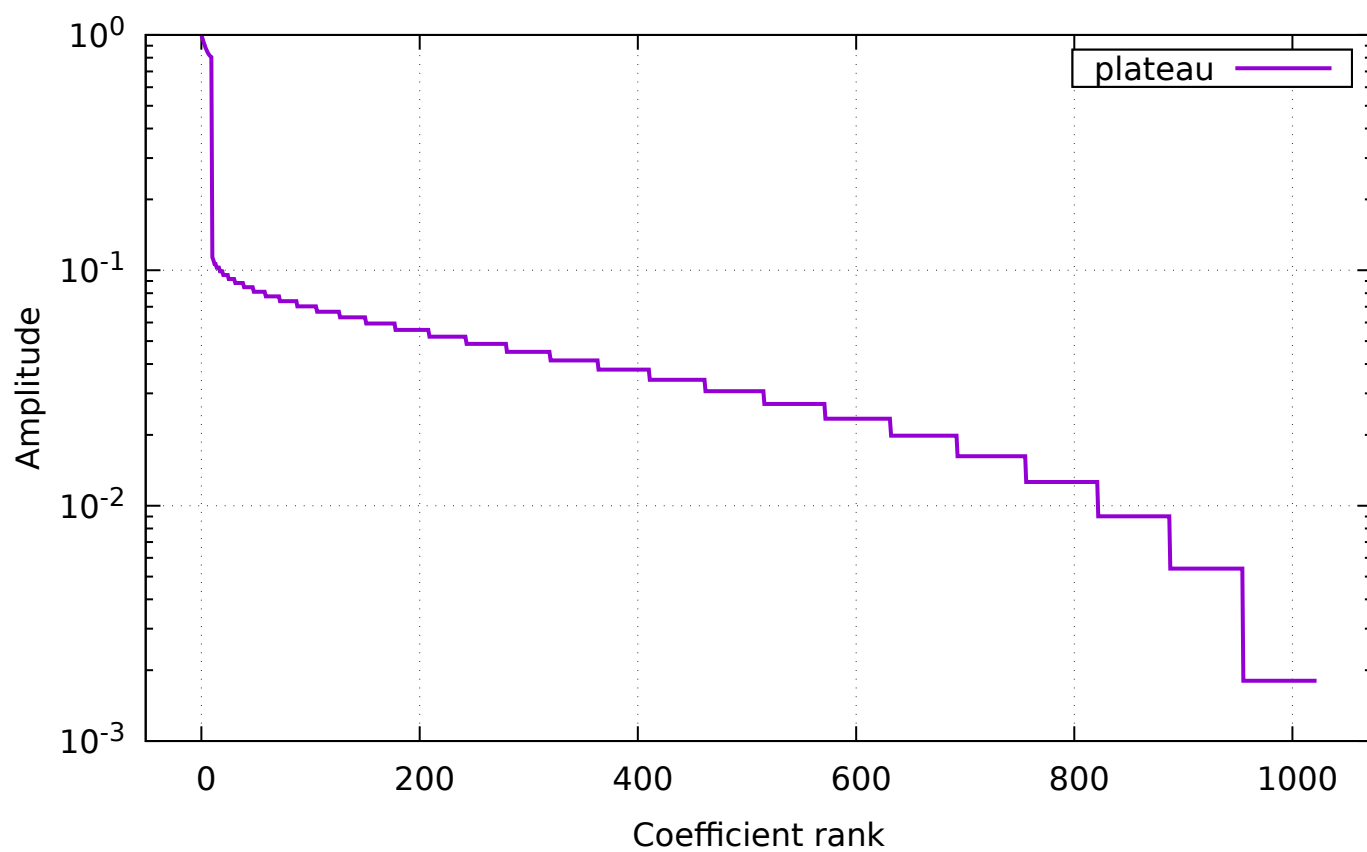


## 20 walsh2
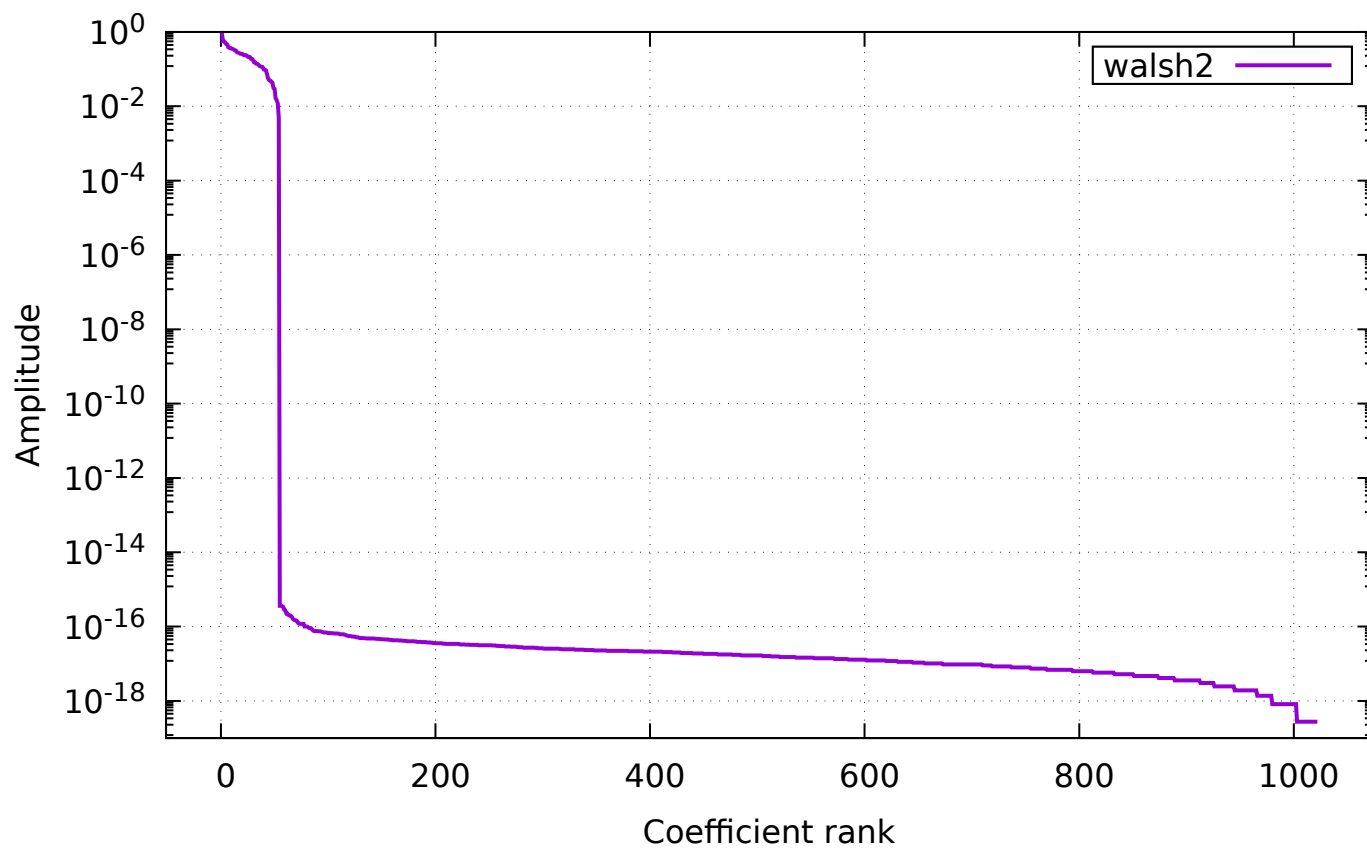
# A Plan

```
{
    "exec": "hnco",
    "opt": "--fn-walsh-transform -b 0 -s 10",
    "parallel": true,
    "results": "results",
    "graphics": "graphics",
    "report": "report",
    "xlogscale": false,
    "ylogscale": true,
    "functions": [
        {
            "id": "one-max",
            "opt": "-F 0",
            "col": ">{{\\nprounddigits{0}}}N{3}{0}"
        },
        {
            "id": "lin",
            "opt": "-F 1 -p instances/lin.10",
            "col": ">{{\\nprounddigits{2}}}N{2}{2}"
        },
        {
            "id": "leading-ones",
            "opt": "-F 10",
            "col": ">{{\\nprounddigits{0}}}N{3}{0}"
        },
        {
            "id": "ridge",
            "opt": "-F 11",
            "col": ">{{\\nprounddigits{0}}}N{3}{0}"
        },
        {
            "id": "jmp-2",
            "opt": "-F 30 -t 2",
            "col": ">{{\\nprounddigits{0}}}N{3}{0}"
        },
        {
            "id": "jmp-4",
            "opt": "-F 30 -t 4",
            "col": ">{{\\nprounddigits{0}}}N{3}{0}"
        },
        {
            "id": "djmp-2",
            "opt": "-F 31 -t 2",
            "col": ">{{\\nprounddigits{0}}}N{3}{0}"
        },
        {
            "id": "djmp-4",
            "opt": "-F 31 -t 4",
            "col": ">{{\\nprounddigits{0}}}N{3}{0}"
        },
        {
            "id": "fp-2",
            "opt": "-F 40 -t 2",
            "col": ">{{\\nprounddigits{0}}}N{3}{0}"
        },
        {
            "id": "fp-4",
            "opt": "-F 40 -t 4",
            "col": ">{{\\nprounddigits{0}}}N{3}{0}"
        },
        {
```

```
            "id": "nk",
            "opt": "-F 60 -p instances/nk.10.2",
            "col": ">{{\\nprounddigits{2}}}N{1}{2}"
        },
        {

            "id": "max-sat",
            "opt": "-F 70 -p instances/ms.10.3.10",
            "col": ">{{\\nprounddigits{0}}}N{3}{0}"
        },
        {

            "id": "labs",
            "opt": "-F 80",
            "col": ">{{\\nprounddigits{2}}}N{1}{2}"
        },

        {

            "id": "ep",
            "opt": "-F 90 -p instances/ep.10",
            "reverse": true,
            "logscale": true,
            "col": ">{{\\nprounddigits{2}}}N{1}{2}"
        },
        {

            "id": "cancel",
            "opt": "-F 100 -s 9",
            "reverse": true,
            "col": ">{{\\nprounddigits{2}}}N{1}{2}"
        },
        {

            "id": "trap",
            "opt": "-F 110 --fn-num-traps 2",
            "col": ">{{\\nprounddigits{0}}}N{3}{0}"
        },
        {

            "id": "hiff",
            "opt": "-F 120 -s 8",
            "col": ">{{\\nprounddigits{0}}}N{3}{0}"
        },
        {

            "id": "plateau",
            "opt": "-F 130",
            "col": ">{{\\nprounddigits{0}}}N{3}{0}"
        },
        {

            "id": "walsh2",
            "opt": "-F 162 -p instances/walsh2.10",
            "col": ">{{\\nprounddigits{2}}}N{3}{2}"
        }
    ]
}
```

# 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
# cache_budget = 0
# ea_lambda = 100
# ea_mu = 10
```

```
# fn_name = noname
# fn_num_traps = 10
# fn_prefix_length = 2
# fn_threshold = 10
# function = 0
# ga_crossover_bias = 0.5
# ga_crossover_probability = 0.5
# ga_tournament_size = 10
# hea_binary_dynamics = 0
# hea_delay = 10000
# hea_num_par_updates = 1
# hea_num_seq_updates = 100
# hea_rate_strategy = 0
# hea_reset_period = 0
# hea_sampling_method = 0
# hea_time_constant = 1000
# hea_weight = 1
# learning_rate = 0.001
# map = 0
# map_input_size = 100
# map_path = nopath
# mutation_probability = 1
# neighborhood = 0
# neighborhood_iterator = 0
# noise_stddev = 1
# num_iterations = 0
# num_threads = 1
# path = nopath
# pn_mutation_probability = 1
# pn_neighborhood = 0
# pn_radius = 2
# population_size = 10
# pv_log_num_components = 5
# radius = 2
# 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
# target = 100
# print_defaults
# last_parameter
# exec_name = hnco
# version = 0.9
# Generated from hnco.json
```