Paper: VEXPA: Validated EXPonential Analysis through regular sub-sampling.pdf

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VEXPA: Validated EXPonential Analysis through regular sub-sampling

Example Figure 1.

Contents

Script environment

This script depends on the random number generator state.

```
clear
close all
```

Example Figure 1.

In Figure 1 we show the results of the analysis of a test signal perturbed by a large number of independent noise realizations: the true λ_i are forming clusters while the ones related to noise are scattered around [2, 20]. In addition, around each λ_i-cluster one empirically finds an almost Froissart doublet-free zone.

```
b = exp(2*pi*1i./(360./[8,25,91,185,220,278,295,305,322,357]));
c = ones(size(b));
params = MultiExponentialParameters(1,{b,c},'normalized');

bsolver = BSolverGEP('--nsamples',60);

figure
plot_unit_circle('--width',2)
hold on
for k = 1:50
    signal = params.construct(1000);
    signal.add_white_gaussian_noise(30,'db');
    B = bsolver.solve(signal);
    plot(B,'k.','MarkerSize',3);
end
plot(b,'ro','LineWidth',2,'MarkerSize',7)
```

```
title(['Figure 1. Analysis results (n = 10, \nu = 30) of test'...
       ' signal \phi(t) after several perturbations'...
       ' \epsilon(z): the true \lambda_i are drawn as red'...
       ' circles.'])
```

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! Solving 30x30 generalized eigenvalue problem for 30 terms, using 60 samples.
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