

```
>> %compute problem in Example 5.1 IV
>> [prob,para] = P_5_1_IV;
>> for k=6:15
tic; fsippsolve(prob,para,k); toc;
end
```

diagnostic =

struct with fields:

```
yalmipversion: '20181012'
yalmipertime: 0.3562
solvertime: 0.0359
info: 'Successfully solved (MOSEK)'
problem: 0
```

The optimal value  $r^{\text{dual}}_k$  of the 6-th dual SDP relaxation ( $D_k$ ) is  
0.81084

The approximate minimizer computed by the 6-th dual SDP relaxation ( $D_k$ ) is  
[-0.36327, 0.36327]

Elapsed time is 67.280059 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'
yalmipertime: 0.3515
solvertime: 0.0807
info: 'Successfully solved (MOSEK)'
problem: 0
```

The optimal value  $r^{\text{dual}}_k$  of the 7-th dual SDP relaxation ( $D_k$ ) is  
0.81477

The approximate minimizer computed by the 7-th dual SDP relaxation ( $D_k$ ) is  
[-0.36175, 0.36175]

Elapsed time is 114.443601 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'
yalmipertime: 0.2189
solvertime: 0.3744
info: 'Successfully solved (MOSEK)'
problem: 0
```

The optimal value  $r^{\text{dual}}_k$  of the 8-th dual SDP relaxation ( $D_k$ ) is  
0.8176

The approximate minimizer computed by the 8-th dual SDP relaxation ( $D_k$ ) is  
[-0.36063, 0.36063]

Elapsed time is 170.792902 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'
yalmipertime: 0.3577
solvertime: 0.2885
info: 'Successfully solved (MOSEK)'
```

problem: 0

The optimal value  $r^{\text{dual}}_k$  of the 9-th dual SDP relaxation ( $D_k$ ) is  
0.81931

The approximate minimizer computed by the 9-th dual SDP relaxation ( $D_k$ ) is  
[-0.35996, 0.35996]

Elapsed time is 256.573824 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'  
yalmiptime: 0.2249  
solvertime: 0.2458  
info: 'Successfully solved (MOSEK)'  
problem: 0
```

The optimal value  $r^{\text{dual}}_k$  of the 10-th dual SDP relaxation ( $D_k$ ) is  
0.82033

The approximate minimizer computed by the 10-th dual SDP relaxation ( $D_k$ ) is  
[-0.35956, 0.35956]

Elapsed time is 327.729861 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'  
yalmiptime: 0.3696  
solvertime: 0.2751  
info: 'Successfully solved (MOSEK)'  
problem: 0
```

The optimal value  $r^{\text{dual}}_k$  of the 11-th dual SDP relaxation ( $D_k$ ) is  
0.82203

The approximate minimizer computed by the 11-th dual SDP relaxation ( $D_k$ ) is  
[-0.3589, 0.3589]

Elapsed time is 465.036346 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'  
yalmiptime: 0.3623  
solvertime: 0.4863  
info: 'Successfully solved (MOSEK)'  
problem: 0
```

The optimal value  $r^{\text{dual}}_k$  of the 12-th dual SDP relaxation ( $D_k$ ) is  
0.82324

The approximate minimizer computed by the 12-th dual SDP relaxation ( $D_k$ ) is  
[-0.35843, 0.35843]

Elapsed time is 640.319507 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'  
yalmiptime: 0.3732
```

```
solvertime: 1.1245
info: 'Successfully solved (MOSEK)'
problem: 0
```

The optimal value  $r^{\text{dual}_k}$  of the 13-th dual SDP relaxation ( $D_k$ ) is  
0.8238

The approximate minimizer computed by the 13-th dual SDP relaxation ( $D_k$ ) is  
[-0.35821, 0.35821]

Elapsed time is 862.048956 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'
yalmiptime: 0.3645
solvertime: 0.8833
info: 'Successfully solved (MOSEK)'
problem: 0
```

The optimal value  $r^{\text{dual}_k}$  of the 14-th dual SDP relaxation ( $D_k$ ) is  
0.82459

The approximate minimizer computed by the 14-th dual SDP relaxation ( $D_k$ ) is  
[-0.3579, 0.3579]

Elapsed time is 1147.719396 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'
yalmiptime: 0.3902
solvertime: 3.7835
info: 'Successfully solved (MOSEK)'
problem: 0
```

The optimal value  $r^{\text{dual}_k}$  of the 15-th dual SDP relaxation ( $D_k$ ) is  
0.82546

The approximate minimizer computed by the 15-th dual SDP relaxation ( $D_k$ ) is  
[-0.35756, 0.35756]

Elapsed time is 1508.914981 seconds.

>>