

```
>> %compute problem in Example 5.1 I
>> [prob,para] = P_5_1_I;
>> for k=6:15
tic; fsippsolve(prob,para,k); toc;
end
```

diagnostic =

struct with fields:

```
    yalmipversion: '20181012'
    yalmiptime: 0.1828
    solvertime: 0.0093
    info: 'Successfully solved (MOSEK)'
    problem: 0
```

The optimal value r^{dual}_k of the 6-th dual SDP relaxation (D_k) is
0.37749

The approximate minimizer computed by the 6-th dual SDP relaxation (D_k) is
[-0.53676, -0.5964]

Elapsed time is 0.914570 seconds.

diagnostic =

struct with fields:

```
    yalmipversion: '20181012'
    yalmiptime: 0.1827
    solvertime: 0.0145
    info: 'Successfully solved (MOSEK)'
    problem: 0
```

The optimal value r^{dual}_k of the 7-th dual SDP relaxation (D_k) is
0.4009

The approximate minimizer computed by the 7-th dual SDP relaxation (D_k) is
[-0.52798, -0.57798]

Elapsed time is 1.251566 seconds.

diagnostic =

struct with fields:

```
    yalmipversion: '20181012'
    yalmiptime: 0.1933
    solvertime: 0.0245
    info: 'Successfully solved (MOSEK)'
    problem: 0
```

The optimal value r^{dual}_k of the 8-th dual SDP relaxation (D_k) is
0.41823

The approximate minimizer computed by the 8-th dual SDP relaxation (D_k) is
[-0.52202, -0.56438]

Elapsed time is 1.894679 seconds.

diagnostic =

struct with fields:

```
    yalmipversion: '20181012'
    yalmiptime: 0.2089
    solvertime: 0.0468
    info: 'Successfully solved (MOSEK)'
```

problem: 0

The optimal value r^{dual}_k of the 9-th dual SDP relaxation (D_k) is
0.43139

The approximate minimizer computed by the 9-th dual SDP relaxation (D_k) is
[-0.51778, -0.55407]

Elapsed time is 3.016137 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'  
yalmiptime: 0.1802  
solvertime: 0.0601  
info: 'Successfully solved (MOSEK)'  
problem: 0
```

The optimal value r^{dual}_k of the 10-th dual SDP relaxation (D_k) is
0.44162

The approximate minimizer computed by the 10-th dual SDP relaxation (D_k) is
[-0.51467, -0.54605]

Elapsed time is 4.290015 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'  
yalmiptime: 0.1781  
solvertime: 0.1646  
info: 'Successfully solved (MOSEK)'  
problem: 0
```

The optimal value r^{dual}_k of the 11-th dual SDP relaxation (D_k) is
0.44972

The approximate minimizer computed by the 11-th dual SDP relaxation (D_k) is
[-0.51232, -0.53969]

Elapsed time is 6.595792 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'  
yalmiptime: 0.1824  
solvertime: 0.8026  
info: 'Successfully solved (MOSEK)'  
problem: 0
```

The optimal value r^{dual}_k of the 12-th dual SDP relaxation (D_k) is
0.45624

The approximate minimizer computed by the 12-th dual SDP relaxation (D_k) is
[-0.5105, -0.53457]

Elapsed time is 11.151476 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'  
yalmiptime: 0.1845
```

```
solvertime: 2.6307
info: 'Successfully solved (MOSEK)'
problem: 0
```

The optimal value r^{dual_k} of the 13-th dual SDP relaxation (D_k) is
0.46122
The approximate minimizer computed by the 13-th dual SDP relaxation (D_k) is
[-0.50919, -0.53061]
Elapsed time is 19.647033 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'
yalmiptime: 0.1865
solvertime: 0.9269
info: 'Successfully solved (MOSEK)'
problem: 0
```

The optimal value r^{dual_k} of the 14-th dual SDP relaxation (D_k) is
0.46233
The approximate minimizer computed by the 14-th dual SDP relaxation (D_k) is
[-0.50896, -0.52969]
Elapsed time is 27.070021 seconds.

diagnostic =

struct with fields:

```
yalmipversion: '20181012'
yalmiptime: 0.1899
solvertime: 1.3708
info: 'Successfully solved (MOSEK)'
problem: 0
```

The optimal value r^{dual_k} of the 15-th dual SDP relaxation (D_k) is
0.46487
The approximate minimizer computed by the 15-th dual SDP relaxation (D_k) is
[-0.50826, -0.52771]
Elapsed time is 42.378803 seconds.

>>