

# sparsity\_jac

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This file is part of CasADi.

CasADi -- A symbolic framework for dynamic optimization.  
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## 1 sparsity\_jac

```
[1]: from casadi import *  
     from numpy import *  
     import casadi as c  
     from pylab import spy, show
```

We construct a simple SX expression

```
[2]: x = SX.sym("x",40)  
     y = x[:-2]-2*x[1:-1]+x[2:]
```

Let's see what the first 5 entries of y look like

```
[3]: print(y[:5])
```

```
@1=2, [((x_0-(@1*x_1))+x_2), ((x_1-(@1*x_2))+x_3), ((x_2-(@1*x_3))+x_4),  
((x_3-(@1*x_4))+x_5), ((x_4-(@1*x_5))+x_6)]
```

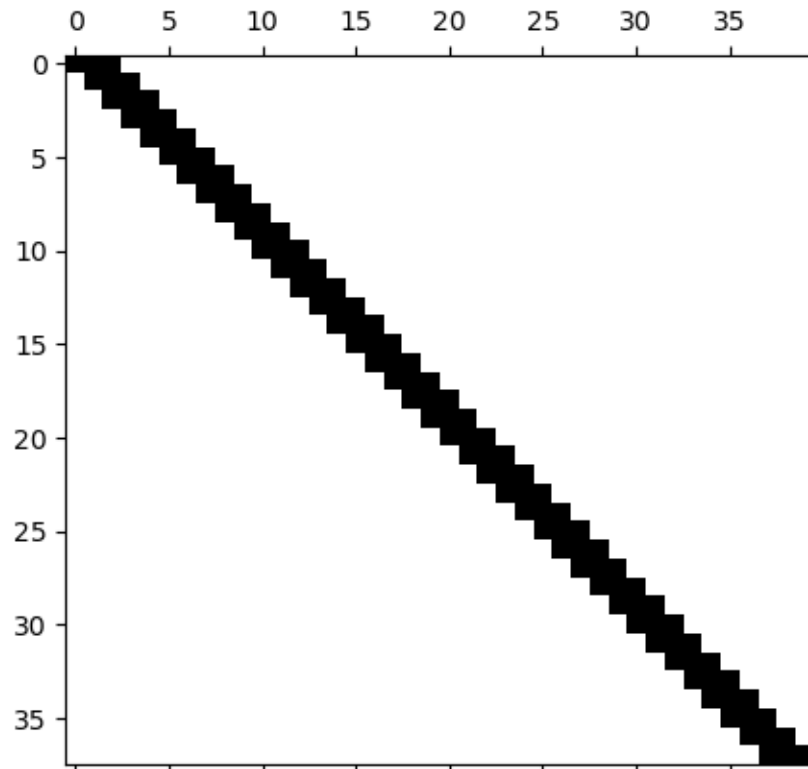
Next, we construct a function

```
[4]: f = Function("f", [x], [y])
```

And we visualize the sparsity of the jacobian

```
[5]: spy(f.sparsity_jac(0, 0))
```

```
[5]: <matplotlib.image.AxesImage at 0x7fdd04503eb0>
```



```
[6]: show()
```