

```
%METODO DI GAUSS-SEIDEL
```

```
A=[4,-1,0,-1,0,0; -1,4,-1,0,-1,0; 0,-1,4,0,0,-1; -1,0,0,4,-1,0; 0,-1,0,-1,4,-1; 0,0,-1,
```

```
A = 6x6
```

```
    4    -1     0    -1     0     0
   -1     4    -1     0    -1     0
    0    -1     4     0     0    -1
   -1     0     0     4    -1     0
    0    -1     0    -1     4    -1
    0     0    -1     0    -1     4
```

```
b=[2 1 2 2 1 2]'
```

```
b = 6x1
```

```
    2
    1
    2
    2
    1
    2
```

```
xo=zeros(6, 1);
N_max=100
```

```
N_max = 100
```

```
err=0.00001;
```

```
n=length(xo);
```

```
D=diag(diag(A));
```

```
L=tril(A)-D;
```

```
U=triu(A)-D;
```

```
Q=inv(D+L);
```

```
GS=-inv(D+L)*U;
```

```
R_sp=max(abs(eigs(GS)));
```

```
if R_sp<1
```

```
    j=1;
```

```
    x1=GS*xo+(Q*b);
```

```
    eps(j)=norm(x1-xo)/norm(x1);
```

```
    while ((j<=N_max) && (eps(j)>err))
```

```
        xo=x1;
```

```
        x1=GS*xo+(Q*b);
```

```
        j=j+1;
```

```
        eps(j)=norm(x1-xo)/norm(x1);
```

```
        epsVect(j-1)=eps(j);
```

```
    end
```

```
else
```

```
    disp("Il metodo non converge");
```

```
end
```

```
x1
```

```
x1 = 6x6
 1.0000    1.0000    1.0000    1.0000    1.0000    1.0000
 1.0000    1.0000    1.0000    1.0000    1.0000    1.0000
 1.0000    1.0000    1.0000    1.0000    1.0000    1.0000
 1.0000    1.0000    1.0000    1.0000    1.0000    1.0000
 1.0000    1.0000    1.0000    1.0000    1.0000    1.0000
 1.0000    1.0000    1.0000    1.0000    1.0000    1.0000
```

```
j
```

```
j = 14
```

```
epsVect '
```

```
ans = 13x1
 0.5534
 0.1596
 0.0729
 0.0349
 0.0135
 0.0050
 0.0018
 0.0007
 0.0002
 0.0001
  .
  .
  .
```

```
semilogy(epsVect, "o", 'MarkerFaceColor', [0 0.447 0.741]);
```

