

Numerov QD Final Artigo

May 2, 2022

```
[1]: import matplotlib.pyplot as plt
import numpy as np
from numpy import random
from random import random

x = np.linspace(-10,100,1001)

def V(x):
    L=0
    Vx=((L*L)-0.25/x/x)+(1/x)+(0.0001*x*x)
    return Vx

def vec_max(dim,x):
    xmax=0
    N=dim
    for j in range(int(N)):
        if j<int(N) and abs(x[j])>xmax:
            xmax=abs(x[j])
        else:
            continue
    return xmax

def nrovl(y0, y1, x0, E, h, iflag):
    q0 = (E-V(x0))
    q1 = (E-V(x0+h))
    q2 = (E-V(x0+h+h))
    p0 = (1 + h*h*q0/12)
    p1 = 2*(1 - 5*h*h*q1/12)
    p2 = 1 + h*h*q2/12
    y2 = (p1*y1-p0*y0)/p2
    if iflag<1:
        print(" x0 = ", x0," y0 = ", y0," V = ",V(x0))
        print(" x1 = ", x0+h," y1 = ",y1," V = ",V(x0+h)," y2 = ",y2)
    return y2

def nrovr(y0, y1, x0, E, h, iflag):
```

```

q0 = (E-V(x0))
q1 = (E-V(x0-h))
q2 = (E-V(x0-h-h))
p0 = (1 + h*h*q0/12)
p1 = 2*(1 - 5*h*h*q1/12)
p2 = 1 + h*h*q2/12
y2 = (p1*y1-p0*y0)/p2
if iflag<1:
    print(" x_100 = ", x0," y0_100 = ", y0," V = ",V(x0))
    print(" x_99 = ", x0-h," y_99 = ",y1," V = ",V(x0-h)," y_98 = ",y2)
return y2

def espectro(xl,xu,h,delta,eps,dim,nmax,kmax,Ein,Vmax,dE,iflag):

    xx=list(range(dim));    yy=list(range(dim));
    yl=list(range(dim));    yr=list(range(dim))
    ee=list(range(nmax));    ff=list(range(nmax));    ff2=list(range(nmax))
    yy1=list(range(dim));    yy2=list(range(dim));    yy3=list(range(dim));
    yy4=list(range(dim));    yy5=list(range(dim))
    nk=list(range(nmax))
    E_old = Ein;    E = Ein + dE

    # here yy1, yy2 and yy3 represent the three wave functions that the
    #code wants to find, if you want to find more solutions you must add
    #new parameters in the code

    for m in range(nmax):
        print(" ***** Eigenvalue #",m+1," ***** ")

        f_old=0

        for k in range(kmax): #iteration for candidate eigenvalue
            #print(" ***** Iteration (for candidate) = ",k," "
            → ***** ")
            imatch=0

            for j in range(dim-1): #classical right turning point
                xx[0]=xl;    xx[dim-1]=xu
                DE1 = E - V(xx[j])
                xx[j+1] = xx[j]+h
                DE2 = E - V(xx[j+1])
                D1D2=DE1*DE2
                if D1D2<=0 and DE1 > 0: #match point
                    imatch = j+1

```

```

        print(" imatch = ",imatch," xmatch = %2.3f" %(xx[imatch]),"
↪V(xmatch) = %2.5f" %(V(xx[imatch])), " E = %2.4f" %(E))

    xmatch=xx[imatch]
    ii=range(imatch+2)
    i_lim = ii[2:imatch+2]

    xx[0]=x1;   xx[1]=x1+h   #initial values
    yy[0]=0;    yy[1] = delta
    #vv[0]=0;    vv[1] = delta

    for i in i_lim:                                     #numerov left
↪solution
        yy[i]=nrovl(yy[i-2],yy[i-1],xx[i-2],E,h,iflag)
        xx[i]= xx[i-1]+h

    jjj=list(range(dim+1))
    j_lim = list(jjj[imatch-1:dim+1])
    comp_j=len(j_lim)
    jj=sorted(j_lim,key=abs,reverse=True)

    for i in range(dim):
        if i<=imatch+1:
            yl[i]=yy[i]
        if i>imatch+1:
            yl[i]=0

    for i in jj:                                         #numerov right
↪solution
        if i==dim:
            yr[dim-1]=0
        if i==(dim-2):
            yr[dim-2]=2*delta
        if i<(dim-2):
            yr[i]=nrovr(yr[i+2],yr[i+1],xx[i+2],E,h,iflag)
            xx[i]= xx[i+1]-h

    for i in range(imatch-1):
        yr[i]=0

    ymatch=yy[imatch]
    yrmatch=yr[imatch]
    ylmatch=yl[imatch]

    if ymatch != 0:
        scale=yrmatch/ymatch
    else:

```

```

        continue

    for t in range(imatch+1):      # y_left
        yy[t] = yy[t]*scale
        yl[t] = -yl[t]*scale
        yl[imatch+1]=-yl[imatch+1]*scale
        #print(" imatch =",imatch," xmatch =",xx[imatch]," ylmatch_
→="",yy[imatch]," yrmatch =",yrmatch)
        ymatch=yy[imatch]
        dlmatch=yy[imatch+1]*scale-yy[imatch-1]                # dif1_left

        t_lim=list(range(dim+1))
        tt=list(t_lim[imatch+1:dim])

        drmatch=yr[imatch+1]-yr[imatch-1]                    # dif1_right

        f =(dlmatch-drmatch)/(2*h)

        for t in tt:                # y_right
            yy[t] = yr[t]

        delta_E=-f*(E-E_old)/(f-f_old)

        if abs(delta_E)<eps:  # determination of the root (energy) of f(E)
→by the secant method
            ee[m] = E
            nk[m] = k
            ff[m] = f
            k = kmax
            break
        else:
            f_old=f;  E_old=E;    E = E + dE/25

    if m==0:
        E = E + 6*dE
        for j in range(dim):
            yy1[j]=yy[j]
    if m==1:
        E = E + 6*dE
        for j in range(dim):
            yy2[j]=yy[j]
    if m==2:
        E = E_old + 13*dE/2
        for j in range(dim):
            yy3[j]=yy[j]

```

```

        if m==3:
            E = E_old + 13*dE/2
            for j in range(dim):
                yy4[j]=yy[j]
        if m==4:
            E = E_old + 4*dE
            for j in range(dim):
                yy5[j]=yy[j]
        print(" k = %2d   E_old = %2.3f   Eingen = %2.3f   f_old = %2.3e   f = %2.3e   delta_E = %2.3e" %(nk[m],E_old,ee[m],f_old,f,delta_E))
        print()

    return ee, xx, yy1, yy2, yy3, yy4, yy5

#=====

a=0.001; b= 65.001; h=0.02
xl=a; xu=b; D = xu-xl
delta = 0.01; eps = 0.00001
dim=int(D/h); kmax=100; nmax=5
n =0; iflag=0
Rydberg=13.605693122994

x0=xl; y0=0. ; y1=delta; iflag=1
nrovl(y0,y1,x0,0,h,iflag)
nrovr(y0,y1,xu,0,h,iflag)

dE = delta/2.8
Ein = 0.086857
Vmax= 2.

print("
↳=====")
print(" ")
print("          Potential : V(x) = ((L*L)-0.25/x/x)+(1/x)+(0.0001*x*x) ")
print("↳(Quantum Dot L=0) ")
print(" ")
print("
↳=====")

print(" E_in = %2.4f" %(Ein), " dE = ",dE," h = ",h," dim = ",dim)
print(" ")

ee,xx,yy1,yy2,yy3,yy4,yy5=espectro(xl,xu,h,delta,eps,dim,nmax,kmax,Ein,Vmax,dE,iflag)

```

```

A=1.                                     # amplitude normalization in 1 unit
ymax1=vec_max(dim,yy1);   ymax2=vec_max(dim,yy2);   ymax3=vec_max(dim,yy3);
→ymax4=vec_max(dim,yy4); ymax5=vec_max(dim,yy5)

for i in range(dim):   # amplitude normalization
    yy1[i] = yy1[i]/ymax1; yy2[i] = yy2[i]/ymax2;   yy3[i] = yy3[i]/ymax3;
→yy4[i] = yy4[i]/ymax4; yy5[i] = yy5[i]/ymax5

colors =['b','r','g','c','m','y','k'];   #color list (blue, red, green, cyan,
→yellow, magenta and black)

plt.figure(figsize=(8, 6), dpi=800)
plt.plot(x,V(x),color=colors[6],linewidth=2)
plt.ylim(-1.,1.5)
plt.xlim(0,65)
plt.xlabel('x')
plt.ylabel('Effective Potential')
plt.grid()
plt.show()

plt.figure(figsize=(8, 6), dpi=800)
plt.plot(xx,yy1,color=colors[0])
plt.plot(xx,yy2,'--',color=colors[1])
plt.plot(xx,yy3,':',color=colors[2])
plt.plot(xx,yy4,'-.',color=colors[3])
plt.plot(xx,yy5,'-', dashes=[8, 4, 2, 4, 2, 4],color=colors[4])
plt.legend([' y1',' y2',' y3',' y4',' y5'],prop={"size":15},frameon=True)
plt.ylim(-2,2)
plt.xlim(0,65)
plt.xlabel('x')
plt.ylabel('Eigenfunctions (normalized amplitude)')
plt.grid()
plt.show()

efic=list(range(nmax));   I=list(range(nmax));   eI=list(range(nmax))

S=A*(xu-xl)                                     # Born normalization
l0=0; l1=0; l2=0; l3=0; l4=0
N=10000
for i in range(N):   # integral of y*y with the Monte Carlo method
    y = A*random()
    j=np.random.randint(dim)
    yj1=yy1[j]*yy1[j];   yj2=yy2[j]*yy2[j];   yj3=yy3[j]*yy3[j];
→yj4=yy4[j]*yy4[j]; yj5=yy5[j]*yy5[j]
    if y <= yj1:
        l0 += 1

```

```

    if y <= yj2:
        l1 += 1
    if y <= yj3:
        l2 += 1
    if y <= yj4:
        l3 += 1
    if y <= yj5:
        l4 += 1

efic[0] = float(l0)/N;  efic[1] = float(l1)/N;  efic[2] = float(l2)/N;  efic[3] =
    float(l3)/N;  efic[4] = float(l4)/N
I[0] = S*efic[0];      I[1] = S*efic[1];      I[2] = S*efic[2];      I[3] =
    S*efic[3];      I[4] = S*efic[4]
eI[0] = (S/np.sqrt(N))*np.sqrt(efic[0]*(1-efic[0]))
eI[1] = (S/np.sqrt(N))*np.sqrt(efic[1]*(1-efic[1]))
eI[2] = (S/np.sqrt(N))*np.sqrt(efic[2]*(1-efic[2]))
eI[3] = (S/np.sqrt(N))*np.sqrt(efic[3]*(1-efic[3]))
eI[4] = (S/np.sqrt(N))*np.sqrt(efic[4]*(1-efic[4]))

print(" ")
print("  probability normalization ")
print("  efic1 = %2.3f    I1 = %2.3f    eI1 = %2.3f" %(efic[0],I[0],eI[0]))
print("  efic2 = %2.3f    I2 = %2.3f    eI2 = %2.3f" %(efic[1],I[1],eI[1]))
print("  efic3 = %2.3f    I3 = %2.3f    eI3 = %2.3f" %(efic[2],I[2],eI[2]))
print("  efic4 = %2.3f    I4 = %2.3f    eI4 = %2.3f" %(efic[3],I[3],eI[3]))
print("  efic5 = %2.3f    I5 = %2.3f    eI5 = %2.3f" %(efic[4],I[4],eI[4]))

for i in range(dim):                                # probability normalization
    yy1[i]=yy1[i]/np.sqrt(I[0]); yy2[i]=yy2[i]/np.sqrt(I[1]); yy3[i]=yy3[i]/np.
    sqrt(I[2]); yy4[i]=yy4[i]/np.sqrt(I[3]); yy5[i]=yy5[i]/np.sqrt(I[4])

ymax1=vec_max(dim,yy1);  ymax2=vec_max(dim,yy2);  ymax3=vec_max(dim,yy3);
    ymax4=vec_max(dim,yy4);  ymax5=vec_max(dim,yy5)

S0=ymax1*ymax1*(xu-xl);  S1=ymax2*ymax2*(xu-xl);  S2=ymax3*ymax3*(xu-xl);
    S3=ymax4*ymax4*(xu-xl);  S4=ymax5*ymax5*(xu-xl)

l0=0;  l1=0; l2=0; l3=0; l4=0                                # checking probability
N=10000
for i in range(N):
    y1 = ymax1*ymax1*random(); y2 = ymax2*ymax2*random(); y3 =
    ymax3*ymax3*random(); y4 = ymax4*ymax4*random(); y5 = ymax5*ymax5*random()
    j=np.random.randint(dim)
    yj1=yy1[j]*yy1[j];  yj2=yy2[j]*yy2[j];  yj3=yy3[j]*yy3[j];
    yj4=yy4[j]*yy4[j];  yj5=yy5[j]*yy5[j]

```

```

if y1<= yj1:
    l0 += 1
if y2 <= yj2:
    l1 += 1
if y3 <= yj3:
    l2 += 1
if y4 <= yj4:
    l3 += 1
if y5 <= yj5:
    l4 += 1

efic[0] = float(l0)/N;  efic[1] = float(l1)/N;  efic[2] = float(l2)/N;  efic[3] =
    float(l3)/N;  efic[4] = float(l4)/N
I[0] = S0*efic[0];      I[1] = S1*efic[1];      I[2] = S2*efic[2];      I[3] =
    S3*efic[3];      I[4] = S4*efic[4]
eI[0] = (S0/np.sqrt(N))*np.sqrt(efic[0]*(1-efic[0]))
eI[1] = (S1/np.sqrt(N))*np.sqrt(efic[1]*(1-efic[1]))
eI[2] = (S2/np.sqrt(N))*np.sqrt(efic[2]*(1-efic[2]))
eI[3] = (S3/np.sqrt(N))*np.sqrt(efic[3]*(1-efic[3]))
eI[4] = (S4/np.sqrt(N))*np.sqrt(efic[4]*(1-efic[4]))

print(" ")
print("  checking probability ")
print("  efic1 = %2.3f    I1 = %2.3f    eI1 = %2.3f" %(efic[0],I[0],eI[0]))
print("  efic2 = %2.3f    I2 = %2.3f    eI2 = %2.3f" %(efic[1],I[1],eI[1]))
print("  efic3 = %2.3f    I3 = %2.3f    eI3 = %2.3f" %(efic[2],I[2],eI[2]))
print("  efic4 = %2.3f    I4 = %2.3f    eI4 = %2.3f" %(efic[3],I[3],eI[3]))
print("  efic5 = %2.3f    I5 = %2.3f    eI5 = %2.3f" %(efic[4],I[4],eI[4]))

et=[-1,-1/4,-1/9];      sig_e=[0.005,0.005,0.005]

plt.figure(figsize=(8, 6), dpi=800)
plt.plot(xx,yy1,color=colors[0])
plt.plot(xx,yy2,'--',color=colors[1])
plt.plot(xx,yy3,':',color=colors[2])
plt.plot(xx,yy4,'-.',color=colors[3])
plt.plot(xx,yy5,'-', dashes=[8, 4, 2, 4, 2, 4],color=colors[4])
plt.legend(['y1','y2','y3','y4','y5'],prop={"size":15},frameon=True)
plt.ylim(-0.5,0.5)
plt.xlim(0,65)
plt.xlabel('x')
plt.ylabel('Normalized Eigenfunctions')
plt.grid(True)
plt.show()

```



```
=====
Potential : V(x) = ((L*L)-0.25/x/x)+(1/x)+(0.0001*x*x)    (Quantum Dot
L=0)
```

```
=====
E_in = 0.0869  dE = 0.0035714285714285718  h = 0.02  dim = 3250
```

```
***** Eigenvalue # 1 *****
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0904
imatch = 1031  xmatch = 20.621  V(xmatch) = 0.09043  E = 0.0904
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0906
imatch = 1035  xmatch = 20.701  V(xmatch) = 0.09058  E = 0.0906
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0907
imatch = 1039  xmatch = 20.781  V(xmatch) = 0.09073  E = 0.0907
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0909
imatch = 1043  xmatch = 20.861  V(xmatch) = 0.09088  E = 0.0909
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0910
imatch = 1047  xmatch = 20.941  V(xmatch) = 0.09104  E = 0.0910
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0911
imatch = 1050  xmatch = 21.001  V(xmatch) = 0.09115  E = 0.0911
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0913
imatch = 1054  xmatch = 21.081  V(xmatch) = 0.09131  E = 0.0913
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0914
imatch = 1057  xmatch = 21.141  V(xmatch) = 0.09144  E = 0.0914
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0916
imatch = 1061  xmatch = 21.221  V(xmatch) = 0.09160  E = 0.0916
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0917
imatch = 1064  xmatch = 21.281  V(xmatch) = 0.09173  E = 0.0917
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0919
imatch = 1068  xmatch = 21.361  V(xmatch) = 0.09190  E = 0.0919
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0920
imatch = 1071  xmatch = 21.421  V(xmatch) = 0.09202  E = 0.0920
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0921
imatch = 1074  xmatch = 21.481  V(xmatch) = 0.09215  E = 0.0921
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0923
imatch = 1077  xmatch = 21.541  V(xmatch) = 0.09229  E = 0.0923
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0924
imatch = 1081  xmatch = 21.621  V(xmatch) = 0.09246  E = 0.0924
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0926
imatch = 1084  xmatch = 21.681  V(xmatch) = 0.09260  E = 0.0926
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0927
imatch = 1087  xmatch = 21.741  V(xmatch) = 0.09273  E = 0.0927
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0929
imatch = 1090  xmatch = 21.801  V(xmatch) = 0.09287  E = 0.0929
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0930
imatch = 1093  xmatch = 21.861  V(xmatch) = 0.09301  E = 0.0930
imatch = 13  xmatch = 0.261  V(xmatch) = 0.16148  E = 0.0931
```

```

imatch = 1096 xmatch = 21.921 V(xmatch) = 0.09315 E = 0.0931
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0933
imatch = 1099 xmatch = 21.981 V(xmatch) = 0.09329 E = 0.0933
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0934
imatch = 1102 xmatch = 22.041 V(xmatch) = 0.09344 E = 0.0934
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0936
imatch = 1105 xmatch = 22.101 V(xmatch) = 0.09358 E = 0.0936
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0937
imatch = 1108 xmatch = 22.161 V(xmatch) = 0.09373 E = 0.0937
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0939
imatch = 1111 xmatch = 22.221 V(xmatch) = 0.09387 E = 0.0939
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0940
imatch = 1114 xmatch = 22.281 V(xmatch) = 0.09402 E = 0.0940
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0941
imatch = 1117 xmatch = 22.341 V(xmatch) = 0.09417 E = 0.0941
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0943
imatch = 1120 xmatch = 22.401 V(xmatch) = 0.09432 E = 0.0943
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0944
imatch = 1123 xmatch = 22.461 V(xmatch) = 0.09448 E = 0.0944
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0946
imatch = 1125 xmatch = 22.501 V(xmatch) = 0.09458 E = 0.0946
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0947
imatch = 1128 xmatch = 22.561 V(xmatch) = 0.09473 E = 0.0947
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0949
imatch = 1131 xmatch = 22.621 V(xmatch) = 0.09489 E = 0.0949
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0950
imatch = 1134 xmatch = 22.681 V(xmatch) = 0.09505 E = 0.0950
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0951
imatch = 1136 xmatch = 22.721 V(xmatch) = 0.09515 E = 0.0951
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0953
imatch = 1139 xmatch = 22.781 V(xmatch) = 0.09531 E = 0.0953
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0954
imatch = 1142 xmatch = 22.841 V(xmatch) = 0.09547 E = 0.0954
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0956
imatch = 1144 xmatch = 22.881 V(xmatch) = 0.09558 E = 0.0956
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0957
imatch = 1147 xmatch = 22.941 V(xmatch) = 0.09574 E = 0.0957
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0959
imatch = 1150 xmatch = 23.001 V(xmatch) = 0.09591 E = 0.0959
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0960
imatch = 1152 xmatch = 23.041 V(xmatch) = 0.09602 E = 0.0960
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0961
imatch = 1155 xmatch = 23.101 V(xmatch) = 0.09619 E = 0.0961
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0963
imatch = 1157 xmatch = 23.141 V(xmatch) = 0.09630 E = 0.0963
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0964
imatch = 1160 xmatch = 23.201 V(xmatch) = 0.09647 E = 0.0964
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0966

```

```

imatch = 1162 xmatch = 23.241 V(xmatch) = 0.09658 E = 0.0966
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0967
imatch = 1165 xmatch = 23.301 V(xmatch) = 0.09675 E = 0.0967
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0969
imatch = 1167 xmatch = 23.341 V(xmatch) = 0.09686 E = 0.0969
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0970
imatch = 1170 xmatch = 23.401 V(xmatch) = 0.09704 E = 0.0970
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0971
imatch = 1172 xmatch = 23.441 V(xmatch) = 0.09715 E = 0.0971
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0973
imatch = 1175 xmatch = 23.501 V(xmatch) = 0.09733 E = 0.0973
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0974
imatch = 1177 xmatch = 23.541 V(xmatch) = 0.09745 E = 0.0974
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0976
imatch = 1180 xmatch = 23.601 V(xmatch) = 0.09762 E = 0.0976
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0977
imatch = 1182 xmatch = 23.641 V(xmatch) = 0.09774 E = 0.0977
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0979
imatch = 1184 xmatch = 23.681 V(xmatch) = 0.09786 E = 0.0979
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0980
imatch = 1187 xmatch = 23.741 V(xmatch) = 0.09804 E = 0.0980
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0981
imatch = 1189 xmatch = 23.781 V(xmatch) = 0.09816 E = 0.0981
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0983
imatch = 1192 xmatch = 23.841 V(xmatch) = 0.09834 E = 0.0983
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0984
imatch = 1194 xmatch = 23.881 V(xmatch) = 0.09847 E = 0.0984
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0986
imatch = 1196 xmatch = 23.921 V(xmatch) = 0.09859 E = 0.0986
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0987
imatch = 1199 xmatch = 23.981 V(xmatch) = 0.09877 E = 0.0987
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0989
imatch = 1201 xmatch = 24.021 V(xmatch) = 0.09890 E = 0.0989
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0990
imatch = 1203 xmatch = 24.061 V(xmatch) = 0.09902 E = 0.0990
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0991
imatch = 1205 xmatch = 24.101 V(xmatch) = 0.09915 E = 0.0991
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0993
imatch = 1208 xmatch = 24.161 V(xmatch) = 0.09934 E = 0.0993
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0994
imatch = 1210 xmatch = 24.201 V(xmatch) = 0.09946 E = 0.0994
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0996
imatch = 1212 xmatch = 24.241 V(xmatch) = 0.09959 E = 0.0996
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0997
imatch = 1214 xmatch = 24.281 V(xmatch) = 0.09972 E = 0.0997
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.0999
imatch = 1217 xmatch = 24.341 V(xmatch) = 0.09991 E = 0.0999
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1000

```

```

imatch = 1219 xmatch = 24.381 V(xmatch) = 0.10004 E = 0.1000
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1001
imatch = 1221 xmatch = 24.421 V(xmatch) = 0.10017 E = 0.1001
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1003
imatch = 1223 xmatch = 24.461 V(xmatch) = 0.10030 E = 0.1003
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1004
imatch = 1226 xmatch = 24.521 V(xmatch) = 0.10049 E = 0.1004
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1006
imatch = 1228 xmatch = 24.561 V(xmatch) = 0.10062 E = 0.1006
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1007
imatch = 1230 xmatch = 24.601 V(xmatch) = 0.10076 E = 0.1007
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1009
imatch = 1232 xmatch = 24.641 V(xmatch) = 0.10089 E = 0.1009
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1010
imatch = 1234 xmatch = 24.681 V(xmatch) = 0.10102 E = 0.1010
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1011
imatch = 1236 xmatch = 24.721 V(xmatch) = 0.10116 E = 0.1011
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1013
imatch = 1238 xmatch = 24.761 V(xmatch) = 0.10129 E = 0.1013
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1014
imatch = 1241 xmatch = 24.821 V(xmatch) = 0.10149 E = 0.1014
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1016
imatch = 1243 xmatch = 24.861 V(xmatch) = 0.10163 E = 0.1016
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1017
imatch = 1245 xmatch = 24.901 V(xmatch) = 0.10176 E = 0.1017
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1019
imatch = 1247 xmatch = 24.941 V(xmatch) = 0.10190 E = 0.1019
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1020
imatch = 1249 xmatch = 24.981 V(xmatch) = 0.10203 E = 0.1020
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1021
imatch = 1251 xmatch = 25.021 V(xmatch) = 0.10217 E = 0.1021
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1023
imatch = 1253 xmatch = 25.061 V(xmatch) = 0.10231 E = 0.1023
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1024
imatch = 1255 xmatch = 25.101 V(xmatch) = 0.10245 E = 0.1024
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1026
imatch = 1257 xmatch = 25.141 V(xmatch) = 0.10259 E = 0.1026
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1027
imatch = 1259 xmatch = 25.181 V(xmatch) = 0.10273 E = 0.1027
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1029
imatch = 1261 xmatch = 25.221 V(xmatch) = 0.10287 E = 0.1029
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1030
imatch = 1263 xmatch = 25.261 V(xmatch) = 0.10301 E = 0.1030
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1031
imatch = 1265 xmatch = 25.301 V(xmatch) = 0.10315 E = 0.1031
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1033
imatch = 1267 xmatch = 25.341 V(xmatch) = 0.10329 E = 0.1033
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1034

```

```

imatch = 1269  xmatch = 25.381  V(xmatch) = 0.10343  E = 0.1034
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1036
imatch = 1271  xmatch = 25.421  V(xmatch) = 0.10357  E = 0.1036
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1037
imatch = 1273  xmatch = 25.461  V(xmatch) = 0.10372  E = 0.1037
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1039
imatch = 1275  xmatch = 25.501  V(xmatch) = 0.10386  E = 0.1039
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1040
imatch = 1277  xmatch = 25.541  V(xmatch) = 0.10400  E = 0.1040
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1041
imatch = 1279  xmatch = 25.581  V(xmatch) = 0.10415  E = 0.1041
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1043
imatch = 1281  xmatch = 25.621  V(xmatch) = 0.10429  E = 0.1043
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1044
imatch = 1283  xmatch = 25.661  V(xmatch) = 0.10444  E = 0.1044
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1046
imatch = 1285  xmatch = 25.701  V(xmatch) = 0.10458  E = 0.1046
k = 0   E_old = 0.105   Eingen = 0.000   f_old = 1.058e+04   f = 1.058e+04
delta_E = 2.506e-04

```

***** Eigenvalue # 2 *****

```

imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1261
imatch = 1531  xmatch = 30.621  V(xmatch) = 0.12616  E = 0.1261
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1263
imatch = 1533  xmatch = 30.661  V(xmatch) = 0.12636  E = 0.1263
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1264
imatch = 1534  xmatch = 30.681  V(xmatch) = 0.12646  E = 0.1264
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1266
imatch = 1536  xmatch = 30.721  V(xmatch) = 0.12666  E = 0.1266
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1267
imatch = 1537  xmatch = 30.741  V(xmatch) = 0.12677  E = 0.1267
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1269
imatch = 1538  xmatch = 30.761  V(xmatch) = 0.12687  E = 0.1269
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1270
imatch = 1540  xmatch = 30.801  V(xmatch) = 0.12707  E = 0.1270
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1271
imatch = 1541  xmatch = 30.821  V(xmatch) = 0.12718  E = 0.1271
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1273
imatch = 1543  xmatch = 30.861  V(xmatch) = 0.12738  E = 0.1273
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1274
imatch = 1544  xmatch = 30.881  V(xmatch) = 0.12748  E = 0.1274
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1276
imatch = 1545  xmatch = 30.901  V(xmatch) = 0.12759  E = 0.1276
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1277
imatch = 1547  xmatch = 30.941  V(xmatch) = 0.12779  E = 0.1277
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1279
imatch = 1548  xmatch = 30.961  V(xmatch) = 0.12790  E = 0.1279
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1280

```

```

imatch = 1550 xmatch = 31.001 V(xmatch) = 0.12810 E = 0.1280
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1281
imatch = 1551 xmatch = 31.021 V(xmatch) = 0.12821 E = 0.1281
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1283
imatch = 1552 xmatch = 31.041 V(xmatch) = 0.12831 E = 0.1283
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1284
imatch = 1554 xmatch = 31.081 V(xmatch) = 0.12852 E = 0.1284
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1286
imatch = 1555 xmatch = 31.101 V(xmatch) = 0.12862 E = 0.1286
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1287
imatch = 1556 xmatch = 31.121 V(xmatch) = 0.12873 E = 0.1287
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1289
imatch = 1558 xmatch = 31.161 V(xmatch) = 0.12893 E = 0.1289
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1290
imatch = 1559 xmatch = 31.181 V(xmatch) = 0.12904 E = 0.1290
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1291
imatch = 1560 xmatch = 31.201 V(xmatch) = 0.12914 E = 0.1291
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1293
imatch = 1562 xmatch = 31.241 V(xmatch) = 0.12935 E = 0.1293
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1294
imatch = 1563 xmatch = 31.261 V(xmatch) = 0.12946 E = 0.1294
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1296
imatch = 1565 xmatch = 31.301 V(xmatch) = 0.12967 E = 0.1296
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1297
imatch = 1566 xmatch = 31.321 V(xmatch) = 0.12977 E = 0.1297
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1299
imatch = 1567 xmatch = 31.341 V(xmatch) = 0.12988 E = 0.1299
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1300
imatch = 1569 xmatch = 31.381 V(xmatch) = 0.13009 E = 0.1300
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1301
imatch = 1570 xmatch = 31.401 V(xmatch) = 0.13019 E = 0.1301
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1303
imatch = 1571 xmatch = 31.421 V(xmatch) = 0.13030 E = 0.1303
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1304
imatch = 1573 xmatch = 31.461 V(xmatch) = 0.13051 E = 0.1304
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1306
imatch = 1574 xmatch = 31.481 V(xmatch) = 0.13062 E = 0.1306
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1307
imatch = 1575 xmatch = 31.501 V(xmatch) = 0.13072 E = 0.1307
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1309
imatch = 1577 xmatch = 31.541 V(xmatch) = 0.13094 E = 0.1309
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1310
imatch = 1578 xmatch = 31.561 V(xmatch) = 0.13104 E = 0.1310
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1311
imatch = 1579 xmatch = 31.581 V(xmatch) = 0.13115 E = 0.1311
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1313
imatch = 1581 xmatch = 31.621 V(xmatch) = 0.13136 E = 0.1313
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1314

```

```

imatch = 1582 xmatch = 31.641 V(xmatch) = 0.13147 E = 0.1314
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1316
imatch = 1583 xmatch = 31.661 V(xmatch) = 0.13158 E = 0.1316
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1317
imatch = 1585 xmatch = 31.701 V(xmatch) = 0.13179 E = 0.1317
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1319
imatch = 1586 xmatch = 31.721 V(xmatch) = 0.13190 E = 0.1319
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1320
imatch = 1587 xmatch = 31.741 V(xmatch) = 0.13201 E = 0.1320
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1321
imatch = 1589 xmatch = 31.781 V(xmatch) = 0.13222 E = 0.1321
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1323
imatch = 1590 xmatch = 31.801 V(xmatch) = 0.13233 E = 0.1323
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1324
imatch = 1591 xmatch = 31.821 V(xmatch) = 0.13244 E = 0.1324
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1326
imatch = 1593 xmatch = 31.861 V(xmatch) = 0.13265 E = 0.1326
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1327
imatch = 1594 xmatch = 31.881 V(xmatch) = 0.13276 E = 0.1327
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1329
imatch = 1595 xmatch = 31.901 V(xmatch) = 0.13287 E = 0.1329
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1330
imatch = 1597 xmatch = 31.941 V(xmatch) = 0.13309 E = 0.1330
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1331
imatch = 1598 xmatch = 31.961 V(xmatch) = 0.13319 E = 0.1331
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1333
imatch = 1599 xmatch = 31.981 V(xmatch) = 0.13330 E = 0.1333
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1334
imatch = 1601 xmatch = 32.021 V(xmatch) = 0.13352 E = 0.1334
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1336
imatch = 1602 xmatch = 32.041 V(xmatch) = 0.13363 E = 0.1336
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1337
imatch = 1603 xmatch = 32.061 V(xmatch) = 0.13374 E = 0.1337
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1339
imatch = 1605 xmatch = 32.101 V(xmatch) = 0.13396 E = 0.1339
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1340
imatch = 1606 xmatch = 32.121 V(xmatch) = 0.13407 E = 0.1340
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1341
imatch = 1607 xmatch = 32.141 V(xmatch) = 0.13418 E = 0.1341
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1343
imatch = 1609 xmatch = 32.181 V(xmatch) = 0.13439 E = 0.1343
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1344
imatch = 1610 xmatch = 32.201 V(xmatch) = 0.13450 E = 0.1344
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1346
imatch = 1611 xmatch = 32.221 V(xmatch) = 0.13461 E = 0.1346
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1347
imatch = 1612 xmatch = 32.241 V(xmatch) = 0.13472 E = 0.1347
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1349

```

```

imatch = 1614 xmatch = 32.281 V(xmatch) = 0.13494 E = 0.1349
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1350
imatch = 1615 xmatch = 32.301 V(xmatch) = 0.13505 E = 0.1350
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1351
imatch = 1616 xmatch = 32.321 V(xmatch) = 0.13517 E = 0.1351
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1353
imatch = 1618 xmatch = 32.361 V(xmatch) = 0.13539 E = 0.1353
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1354
imatch = 1619 xmatch = 32.381 V(xmatch) = 0.13550 E = 0.1354
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1356
imatch = 1620 xmatch = 32.401 V(xmatch) = 0.13561 E = 0.1356
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1357
imatch = 1621 xmatch = 32.421 V(xmatch) = 0.13572 E = 0.1357
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1359
imatch = 1623 xmatch = 32.461 V(xmatch) = 0.13594 E = 0.1359
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1360
imatch = 1624 xmatch = 32.481 V(xmatch) = 0.13605 E = 0.1360
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1361
imatch = 1625 xmatch = 32.501 V(xmatch) = 0.13616 E = 0.1361
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1363
imatch = 1627 xmatch = 32.541 V(xmatch) = 0.13639 E = 0.1363
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1364
imatch = 1628 xmatch = 32.561 V(xmatch) = 0.13650 E = 0.1364
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1366
imatch = 1629 xmatch = 32.581 V(xmatch) = 0.13661 E = 0.1366
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1367
imatch = 1630 xmatch = 32.601 V(xmatch) = 0.13672 E = 0.1367
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1369
imatch = 1632 xmatch = 32.641 V(xmatch) = 0.13695 E = 0.1369
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1370
imatch = 1633 xmatch = 32.661 V(xmatch) = 0.13706 E = 0.1370
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1371
imatch = 1634 xmatch = 32.681 V(xmatch) = 0.13717 E = 0.1371
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1373
imatch = 1636 xmatch = 32.721 V(xmatch) = 0.13739 E = 0.1373
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1374
imatch = 1637 xmatch = 32.741 V(xmatch) = 0.13751 E = 0.1374
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1376
imatch = 1638 xmatch = 32.761 V(xmatch) = 0.13762 E = 0.1376
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1377
imatch = 1639 xmatch = 32.781 V(xmatch) = 0.13773 E = 0.1377
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1379
imatch = 1641 xmatch = 32.821 V(xmatch) = 0.13796 E = 0.1379
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1380
imatch = 1642 xmatch = 32.841 V(xmatch) = 0.13807 E = 0.1380
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1381
imatch = 1643 xmatch = 32.861 V(xmatch) = 0.13818 E = 0.1381
imatch = 13 xmatch = 0.261 V(xmatch) = 0.16148 E = 0.1383

```



```

imatch = 1644  xmatch = 32.881  V(xmatch) = 0.13830  E = 0.1383
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1384
imatch = 1646  xmatch = 32.921  V(xmatch) = 0.13852  E = 0.1384
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1386
imatch = 1647  xmatch = 32.941  V(xmatch) = 0.13864  E = 0.1386
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1387
imatch = 1648  xmatch = 32.961  V(xmatch) = 0.13875  E = 0.1387
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1389
imatch = 1649  xmatch = 32.981  V(xmatch) = 0.13887  E = 0.1389
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1390
imatch = 1651  xmatch = 33.021  V(xmatch) = 0.13909  E = 0.1390
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1391
imatch = 1652  xmatch = 33.041  V(xmatch) = 0.13921  E = 0.1391
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1393
imatch = 1653  xmatch = 33.061  V(xmatch) = 0.13932  E = 0.1393
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1394
imatch = 1654  xmatch = 33.081  V(xmatch) = 0.13944  E = 0.1394
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1396
imatch = 1656  xmatch = 33.121  V(xmatch) = 0.13966  E = 0.1396
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1397
imatch = 1657  xmatch = 33.141  V(xmatch) = 0.13978  E = 0.1397
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1399
imatch = 1658  xmatch = 33.161  V(xmatch) = 0.13989  E = 0.1399
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1400
imatch = 1659  xmatch = 33.181  V(xmatch) = 0.14001  E = 0.1400
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1401
imatch = 1661  xmatch = 33.221  V(xmatch) = 0.14024  E = 0.1401
imatch = 13   xmatch = 0.261  V(xmatch) = 0.16148  E = 0.1403
imatch = 1662  xmatch = 33.241  V(xmatch) = 0.14035  E = 0.1403
k = 1   E_old = 0.140   Eingen = 1.000   f_old = 3.089e+02   f = 3.089e+02
delta_E = 9.745e-05

```

***** Eigenvalue # 3 *****

```

imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1619
imatch = 1836  xmatch = 36.721  V(xmatch) = 0.16189  E = 0.1619
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1620
imatch = 1837  xmatch = 36.741  V(xmatch) = 0.16202  E = 0.1620
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1621
imatch = 1838  xmatch = 36.761  V(xmatch) = 0.16215  E = 0.1621
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1623
imatch = 1839  xmatch = 36.781  V(xmatch) = 0.16229  E = 0.1623
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1624
imatch = 1841  xmatch = 36.821  V(xmatch) = 0.16255  E = 0.1624
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1626
imatch = 1842  xmatch = 36.841  V(xmatch) = 0.16269  E = 0.1626
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1627
imatch = 1843  xmatch = 36.861  V(xmatch) = 0.16282  E = 0.1627
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1629

```

```

imatch = 1844 xmatch = 36.881 V(xmatch) = 0.16295 E = 0.1629
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1630
imatch = 1845 xmatch = 36.901 V(xmatch) = 0.16308 E = 0.1630
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1631
imatch = 1846 xmatch = 36.921 V(xmatch) = 0.16322 E = 0.1631
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1633
imatch = 1847 xmatch = 36.941 V(xmatch) = 0.16335 E = 0.1633
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1634
imatch = 1848 xmatch = 36.961 V(xmatch) = 0.16348 E = 0.1634
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1636
imatch = 1849 xmatch = 36.981 V(xmatch) = 0.16362 E = 0.1636
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1637
imatch = 1850 xmatch = 37.001 V(xmatch) = 0.16375 E = 0.1637
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1639
imatch = 1851 xmatch = 37.021 V(xmatch) = 0.16388 E = 0.1639
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1640
imatch = 1852 xmatch = 37.041 V(xmatch) = 0.16402 E = 0.1640
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1641
imatch = 1853 xmatch = 37.061 V(xmatch) = 0.16415 E = 0.1641
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1643
imatch = 1854 xmatch = 37.081 V(xmatch) = 0.16429 E = 0.1643
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1644
imatch = 1856 xmatch = 37.121 V(xmatch) = 0.16455 E = 0.1644
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1646
imatch = 1857 xmatch = 37.141 V(xmatch) = 0.16469 E = 0.1646
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1647
imatch = 1858 xmatch = 37.161 V(xmatch) = 0.16482 E = 0.1647
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1649
imatch = 1859 xmatch = 37.181 V(xmatch) = 0.16496 E = 0.1649
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1650
imatch = 1860 xmatch = 37.201 V(xmatch) = 0.16509 E = 0.1650
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1651
imatch = 1861 xmatch = 37.221 V(xmatch) = 0.16523 E = 0.1651
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1653
imatch = 1862 xmatch = 37.241 V(xmatch) = 0.16536 E = 0.1653
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1654
imatch = 1863 xmatch = 37.261 V(xmatch) = 0.16550 E = 0.1654
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1656
imatch = 1864 xmatch = 37.281 V(xmatch) = 0.16563 E = 0.1656
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1657
imatch = 1865 xmatch = 37.301 V(xmatch) = 0.16577 E = 0.1657
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1659
imatch = 1866 xmatch = 37.321 V(xmatch) = 0.16590 E = 0.1659
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1660
imatch = 1867 xmatch = 37.341 V(xmatch) = 0.16604 E = 0.1660
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1661
imatch = 1868 xmatch = 37.361 V(xmatch) = 0.16617 E = 0.1661
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1663

```

```

imatch = 1869 xmatch = 37.381 V(xmatch) = 0.16631 E = 0.1663
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1664
imatch = 1870 xmatch = 37.401 V(xmatch) = 0.16644 E = 0.1664
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1666
imatch = 1871 xmatch = 37.421 V(xmatch) = 0.16658 E = 0.1666
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1667
imatch = 1873 xmatch = 37.461 V(xmatch) = 0.16685 E = 0.1667
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1669
imatch = 1874 xmatch = 37.481 V(xmatch) = 0.16698 E = 0.1669
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1670
imatch = 1875 xmatch = 37.501 V(xmatch) = 0.16712 E = 0.1670
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1671
imatch = 1876 xmatch = 37.521 V(xmatch) = 0.16726 E = 0.1671
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1673
imatch = 1877 xmatch = 37.541 V(xmatch) = 0.16739 E = 0.1673
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1674
imatch = 1878 xmatch = 37.561 V(xmatch) = 0.16753 E = 0.1674
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1676
imatch = 1879 xmatch = 37.581 V(xmatch) = 0.16767 E = 0.1676
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1677
imatch = 1880 xmatch = 37.601 V(xmatch) = 0.16780 E = 0.1677
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1679
imatch = 1881 xmatch = 37.621 V(xmatch) = 0.16794 E = 0.1679
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1680
imatch = 1882 xmatch = 37.641 V(xmatch) = 0.16807 E = 0.1680
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1681
imatch = 1883 xmatch = 37.661 V(xmatch) = 0.16821 E = 0.1681
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1683
imatch = 1884 xmatch = 37.681 V(xmatch) = 0.16835 E = 0.1683
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1684
imatch = 1885 xmatch = 37.701 V(xmatch) = 0.16849 E = 0.1684
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1686
imatch = 1886 xmatch = 37.721 V(xmatch) = 0.16862 E = 0.1686
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1687
imatch = 1887 xmatch = 37.741 V(xmatch) = 0.16876 E = 0.1687
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1689
imatch = 1888 xmatch = 37.761 V(xmatch) = 0.16890 E = 0.1689
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1690
imatch = 1889 xmatch = 37.781 V(xmatch) = 0.16903 E = 0.1690
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1691
imatch = 1890 xmatch = 37.801 V(xmatch) = 0.16917 E = 0.1691
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1693
imatch = 1891 xmatch = 37.821 V(xmatch) = 0.16931 E = 0.1693
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1694
imatch = 1892 xmatch = 37.841 V(xmatch) = 0.16945 E = 0.1694
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1696
imatch = 1893 xmatch = 37.861 V(xmatch) = 0.16958 E = 0.1696
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1697

```

```

imatch = 1894  xmatch = 37.881  V(xmatch) = 0.16972  E = 0.1697
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1699
imatch = 1895  xmatch = 37.901  V(xmatch) = 0.16986  E = 0.1699
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1700
imatch = 1897  xmatch = 37.941  V(xmatch) = 0.17013  E = 0.1700
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1701
imatch = 1898  xmatch = 37.961  V(xmatch) = 0.17027  E = 0.1701
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1703
imatch = 1899  xmatch = 37.981  V(xmatch) = 0.17041  E = 0.1703
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1704
imatch = 1900  xmatch = 38.001  V(xmatch) = 0.17055  E = 0.1704
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1706
imatch = 1901  xmatch = 38.021  V(xmatch) = 0.17069  E = 0.1706
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1707
imatch = 1902  xmatch = 38.041  V(xmatch) = 0.17083  E = 0.1707
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1709
imatch = 1903  xmatch = 38.061  V(xmatch) = 0.17097  E = 0.1709
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1710
imatch = 1904  xmatch = 38.081  V(xmatch) = 0.17110  E = 0.1710
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1711
imatch = 1905  xmatch = 38.101  V(xmatch) = 0.17124  E = 0.1711
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1713
imatch = 1906  xmatch = 38.121  V(xmatch) = 0.17138  E = 0.1713
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1714
imatch = 1907  xmatch = 38.141  V(xmatch) = 0.17152  E = 0.1714
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1716
imatch = 1908  xmatch = 38.161  V(xmatch) = 0.17166  E = 0.1716
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1717
imatch = 1909  xmatch = 38.181  V(xmatch) = 0.17180  E = 0.1717
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1719
imatch = 1910  xmatch = 38.201  V(xmatch) = 0.17194  E = 0.1719
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1720
imatch = 1911  xmatch = 38.221  V(xmatch) = 0.17208  E = 0.1720
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1721
imatch = 1912  xmatch = 38.241  V(xmatch) = 0.17222  E = 0.1721
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1723
imatch = 1913  xmatch = 38.261  V(xmatch) = 0.17236  E = 0.1723
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1724
imatch = 1914  xmatch = 38.281  V(xmatch) = 0.17250  E = 0.1724
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1726
imatch = 1915  xmatch = 38.301  V(xmatch) = 0.17264  E = 0.1726
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1727
imatch = 1916  xmatch = 38.321  V(xmatch) = 0.17278  E = 0.1727
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1729
imatch = 1917  xmatch = 38.341  V(xmatch) = 0.17291  E = 0.1729
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1730
imatch = 1918  xmatch = 38.361  V(xmatch) = 0.17305  E = 0.1730
imatch = 14   xmatch = 0.281  V(xmatch) = 0.39261  E = 0.1731

```

```

imatch = 1919 xmatch = 38.381 V(xmatch) = 0.17319 E = 0.1731
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1733
imatch = 1920 xmatch = 38.401 V(xmatch) = 0.17334 E = 0.1733
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1734
imatch = 1921 xmatch = 38.421 V(xmatch) = 0.17348 E = 0.1734
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1736
imatch = 1922 xmatch = 38.441 V(xmatch) = 0.17362 E = 0.1736
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1737
imatch = 1923 xmatch = 38.461 V(xmatch) = 0.17376 E = 0.1737
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1739
imatch = 1924 xmatch = 38.481 V(xmatch) = 0.17390 E = 0.1739
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1740
imatch = 1925 xmatch = 38.501 V(xmatch) = 0.17404 E = 0.1740
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1741
imatch = 1926 xmatch = 38.521 V(xmatch) = 0.17418 E = 0.1741
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1743
imatch = 1927 xmatch = 38.541 V(xmatch) = 0.17432 E = 0.1743
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1744
imatch = 1928 xmatch = 38.561 V(xmatch) = 0.17446 E = 0.1744
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1746
imatch = 1929 xmatch = 38.581 V(xmatch) = 0.17460 E = 0.1746
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1747
imatch = 1930 xmatch = 38.601 V(xmatch) = 0.17474 E = 0.1747
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1749
imatch = 1931 xmatch = 38.621 V(xmatch) = 0.17488 E = 0.1749
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1750
imatch = 1932 xmatch = 38.641 V(xmatch) = 0.17502 E = 0.1750
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1751
imatch = 1933 xmatch = 38.661 V(xmatch) = 0.17517 E = 0.1751
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1753
imatch = 1934 xmatch = 38.681 V(xmatch) = 0.17531 E = 0.1753
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1754
imatch = 1935 xmatch = 38.701 V(xmatch) = 0.17545 E = 0.1754
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1756
imatch = 1936 xmatch = 38.721 V(xmatch) = 0.17559 E = 0.1756
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1757
imatch = 1937 xmatch = 38.741 V(xmatch) = 0.17573 E = 0.1757
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1759
imatch = 1938 xmatch = 38.761 V(xmatch) = 0.17587 E = 0.1759
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1760
imatch = 1939 xmatch = 38.781 V(xmatch) = 0.17602 E = 0.1760
k = 2 E_old = 0.176 Eingen = 2.000 f_old = 2.308e+02 f = 2.308e+02
delta_E = 7.197e-04

```

```

***** Eigenvalue # 4 *****
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1992
imatch = 2095 xmatch = 41.901 V(xmatch) = 0.19929 E = 0.1992
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1994

```

```

imatch = 2096 xmatch = 41.921 V(xmatch) = 0.19945 E = 0.1994
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1995
imatch = 2097 xmatch = 41.941 V(xmatch) = 0.19961 E = 0.1995
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1996
imatch = 2098 xmatch = 41.961 V(xmatch) = 0.19976 E = 0.1996
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1998
imatch = 2099 xmatch = 41.981 V(xmatch) = 0.19992 E = 0.1998
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.1999
imatch = 2100 xmatch = 42.001 V(xmatch) = 0.20008 E = 0.1999
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2001
imatch = 2100 xmatch = 42.001 V(xmatch) = 0.20008 E = 0.2001
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2002
imatch = 2101 xmatch = 42.021 V(xmatch) = 0.20023 E = 0.2002
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2004
imatch = 2102 xmatch = 42.041 V(xmatch) = 0.20039 E = 0.2004
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2005
imatch = 2103 xmatch = 42.061 V(xmatch) = 0.20055 E = 0.2005
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2006
imatch = 2104 xmatch = 42.081 V(xmatch) = 0.20070 E = 0.2006
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2008
imatch = 2105 xmatch = 42.101 V(xmatch) = 0.20086 E = 0.2008
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2009
imatch = 2106 xmatch = 42.121 V(xmatch) = 0.20102 E = 0.2009
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2011
imatch = 2107 xmatch = 42.141 V(xmatch) = 0.20118 E = 0.2011
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2012
imatch = 2108 xmatch = 42.161 V(xmatch) = 0.20133 E = 0.2012
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2014
imatch = 2109 xmatch = 42.181 V(xmatch) = 0.20149 E = 0.2014
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2015
imatch = 2110 xmatch = 42.201 V(xmatch) = 0.20165 E = 0.2015
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2016
imatch = 2110 xmatch = 42.201 V(xmatch) = 0.20165 E = 0.2016
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2018
imatch = 2111 xmatch = 42.221 V(xmatch) = 0.20181 E = 0.2018
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2019
imatch = 2112 xmatch = 42.241 V(xmatch) = 0.20196 E = 0.2019
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2021
imatch = 2113 xmatch = 42.261 V(xmatch) = 0.20212 E = 0.2021
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2022
imatch = 2114 xmatch = 42.281 V(xmatch) = 0.20228 E = 0.2022
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2024
imatch = 2115 xmatch = 42.301 V(xmatch) = 0.20244 E = 0.2024
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2025
imatch = 2116 xmatch = 42.321 V(xmatch) = 0.20260 E = 0.2025
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2026
imatch = 2117 xmatch = 42.341 V(xmatch) = 0.20275 E = 0.2026
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2028

```

```

imatch = 2118 xmatch = 42.361 V(xmatch) = 0.20291 E = 0.2028
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2029
imatch = 2119 xmatch = 42.381 V(xmatch) = 0.20307 E = 0.2029
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2031
imatch = 2120 xmatch = 42.401 V(xmatch) = 0.20323 E = 0.2031
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2032
imatch = 2120 xmatch = 42.401 V(xmatch) = 0.20323 E = 0.2032
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2034
imatch = 2121 xmatch = 42.421 V(xmatch) = 0.20339 E = 0.2034
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2035
imatch = 2122 xmatch = 42.441 V(xmatch) = 0.20355 E = 0.2035
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2036
imatch = 2123 xmatch = 42.461 V(xmatch) = 0.20371 E = 0.2036
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2038
imatch = 2124 xmatch = 42.481 V(xmatch) = 0.20386 E = 0.2038
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2039
imatch = 2125 xmatch = 42.501 V(xmatch) = 0.20402 E = 0.2039
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2041
imatch = 2126 xmatch = 42.521 V(xmatch) = 0.20418 E = 0.2041
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2042
imatch = 2127 xmatch = 42.541 V(xmatch) = 0.20434 E = 0.2042
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2044
imatch = 2128 xmatch = 42.561 V(xmatch) = 0.20450 E = 0.2044
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2045
imatch = 2128 xmatch = 42.561 V(xmatch) = 0.20450 E = 0.2045
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2046
imatch = 2129 xmatch = 42.581 V(xmatch) = 0.20466 E = 0.2046
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2048
imatch = 2130 xmatch = 42.601 V(xmatch) = 0.20482 E = 0.2048
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2049
imatch = 2131 xmatch = 42.621 V(xmatch) = 0.20498 E = 0.2049
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2051
imatch = 2132 xmatch = 42.641 V(xmatch) = 0.20514 E = 0.2051
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2052
imatch = 2133 xmatch = 42.661 V(xmatch) = 0.20530 E = 0.2052
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2054
imatch = 2134 xmatch = 42.681 V(xmatch) = 0.20546 E = 0.2054
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2055
imatch = 2135 xmatch = 42.701 V(xmatch) = 0.20562 E = 0.2055
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2056
imatch = 2136 xmatch = 42.721 V(xmatch) = 0.20578 E = 0.2056
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2058
imatch = 2137 xmatch = 42.741 V(xmatch) = 0.20594 E = 0.2058
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2059
imatch = 2137 xmatch = 42.741 V(xmatch) = 0.20594 E = 0.2059
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2061
imatch = 2138 xmatch = 42.761 V(xmatch) = 0.20610 E = 0.2061
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2062

```

```

imatch = 2139 xmatch = 42.781 V(xmatch) = 0.20626 E = 0.2062
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2064
imatch = 2140 xmatch = 42.801 V(xmatch) = 0.20642 E = 0.2064
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2065
imatch = 2141 xmatch = 42.821 V(xmatch) = 0.20658 E = 0.2065
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2066
imatch = 2142 xmatch = 42.841 V(xmatch) = 0.20674 E = 0.2066
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2068
imatch = 2143 xmatch = 42.861 V(xmatch) = 0.20690 E = 0.2068
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2069
imatch = 2144 xmatch = 42.881 V(xmatch) = 0.20706 E = 0.2069
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2071
imatch = 2145 xmatch = 42.901 V(xmatch) = 0.20722 E = 0.2071
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2072
imatch = 2145 xmatch = 42.901 V(xmatch) = 0.20722 E = 0.2072
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2074
imatch = 2146 xmatch = 42.921 V(xmatch) = 0.20738 E = 0.2074
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2075
imatch = 2147 xmatch = 42.941 V(xmatch) = 0.20755 E = 0.2075
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2076
imatch = 2148 xmatch = 42.961 V(xmatch) = 0.20771 E = 0.2076
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2078
imatch = 2149 xmatch = 42.981 V(xmatch) = 0.20787 E = 0.2078
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2079
imatch = 2150 xmatch = 43.001 V(xmatch) = 0.20803 E = 0.2079
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2081
imatch = 2151 xmatch = 43.021 V(xmatch) = 0.20819 E = 0.2081
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2082
imatch = 2152 xmatch = 43.041 V(xmatch) = 0.20835 E = 0.2082
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2084
imatch = 2153 xmatch = 43.061 V(xmatch) = 0.20851 E = 0.2084
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2085
imatch = 2153 xmatch = 43.061 V(xmatch) = 0.20851 E = 0.2085
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2086
imatch = 2154 xmatch = 43.081 V(xmatch) = 0.20867 E = 0.2086
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2088
imatch = 2155 xmatch = 43.101 V(xmatch) = 0.20884 E = 0.2088
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2089
imatch = 2156 xmatch = 43.121 V(xmatch) = 0.20900 E = 0.2089
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2091
imatch = 2157 xmatch = 43.141 V(xmatch) = 0.20916 E = 0.2091
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2092
imatch = 2158 xmatch = 43.161 V(xmatch) = 0.20932 E = 0.2092
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2094
imatch = 2159 xmatch = 43.181 V(xmatch) = 0.20948 E = 0.2094
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2095
imatch = 2160 xmatch = 43.201 V(xmatch) = 0.20965 E = 0.2095
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2096

```



```

imatch = 2160 xmatch = 43.201 V(xmatch) = 0.20965 E = 0.2096
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2098
imatch = 2161 xmatch = 43.221 V(xmatch) = 0.20981 E = 0.2098
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2099
imatch = 2162 xmatch = 43.241 V(xmatch) = 0.20997 E = 0.2099
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2101
imatch = 2163 xmatch = 43.261 V(xmatch) = 0.21013 E = 0.2101
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2102
imatch = 2164 xmatch = 43.281 V(xmatch) = 0.21030 E = 0.2102
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2104
imatch = 2165 xmatch = 43.301 V(xmatch) = 0.21046 E = 0.2104
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2105
imatch = 2166 xmatch = 43.321 V(xmatch) = 0.21062 E = 0.2105
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2106
imatch = 2167 xmatch = 43.341 V(xmatch) = 0.21078 E = 0.2106
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2108
imatch = 2168 xmatch = 43.361 V(xmatch) = 0.21095 E = 0.2108
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2109
imatch = 2168 xmatch = 43.361 V(xmatch) = 0.21095 E = 0.2109
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2111
imatch = 2169 xmatch = 43.381 V(xmatch) = 0.21111 E = 0.2111
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2112
imatch = 2170 xmatch = 43.401 V(xmatch) = 0.21127 E = 0.2112
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2114
imatch = 2171 xmatch = 43.421 V(xmatch) = 0.21144 E = 0.2114
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2115
imatch = 2172 xmatch = 43.441 V(xmatch) = 0.21160 E = 0.2115
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2116
imatch = 2173 xmatch = 43.461 V(xmatch) = 0.21176 E = 0.2116
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2118
imatch = 2174 xmatch = 43.481 V(xmatch) = 0.21193 E = 0.2118
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2119
imatch = 2175 xmatch = 43.501 V(xmatch) = 0.21209 E = 0.2119
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2121
imatch = 2175 xmatch = 43.501 V(xmatch) = 0.21209 E = 0.2121
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2122
imatch = 2176 xmatch = 43.521 V(xmatch) = 0.21225 E = 0.2122
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2124
imatch = 2177 xmatch = 43.541 V(xmatch) = 0.21242 E = 0.2124
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2125
imatch = 2178 xmatch = 43.561 V(xmatch) = 0.21258 E = 0.2125
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2126
imatch = 2179 xmatch = 43.581 V(xmatch) = 0.21274 E = 0.2126
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2128
imatch = 2180 xmatch = 43.601 V(xmatch) = 0.21291 E = 0.2128
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2129
imatch = 2181 xmatch = 43.621 V(xmatch) = 0.21307 E = 0.2129
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2131

```

```

imatch = 2181 xmatch = 43.621 V(xmatch) = 0.21307 E = 0.2131
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2132
imatch = 2182 xmatch = 43.641 V(xmatch) = 0.21324 E = 0.2132
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2134
imatch = 2183 xmatch = 43.661 V(xmatch) = 0.21340 E = 0.2134
k = 3 E_old = 0.213 Eingen = 3.000 f_old = 8.938e+00 f = 8.938e+00
delta_E = 1.713e-04

```

***** Eigenvalue # 5 *****

```

imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2366
imatch = 2320 xmatch = 46.401 V(xmatch) = 0.23674 E = 0.2366
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2367
imatch = 2320 xmatch = 46.401 V(xmatch) = 0.23674 E = 0.2367
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2369
imatch = 2321 xmatch = 46.421 V(xmatch) = 0.23692 E = 0.2369
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2370
imatch = 2322 xmatch = 46.441 V(xmatch) = 0.23709 E = 0.2370
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2371
imatch = 2323 xmatch = 46.461 V(xmatch) = 0.23727 E = 0.2371
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2373
imatch = 2324 xmatch = 46.481 V(xmatch) = 0.23745 E = 0.2373
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2374
imatch = 2324 xmatch = 46.481 V(xmatch) = 0.23745 E = 0.2374
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2376
imatch = 2325 xmatch = 46.501 V(xmatch) = 0.23762 E = 0.2376
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2377
imatch = 2326 xmatch = 46.521 V(xmatch) = 0.23780 E = 0.2377
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2379
imatch = 2327 xmatch = 46.541 V(xmatch) = 0.23798 E = 0.2379
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2380
imatch = 2328 xmatch = 46.561 V(xmatch) = 0.23815 E = 0.2380
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2381
imatch = 2328 xmatch = 46.561 V(xmatch) = 0.23815 E = 0.2381
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2383
imatch = 2329 xmatch = 46.581 V(xmatch) = 0.23833 E = 0.2383
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2384
imatch = 2330 xmatch = 46.601 V(xmatch) = 0.23851 E = 0.2384
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2386
imatch = 2331 xmatch = 46.621 V(xmatch) = 0.23869 E = 0.2386
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2387
imatch = 2332 xmatch = 46.641 V(xmatch) = 0.23886 E = 0.2387
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2389
imatch = 2332 xmatch = 46.641 V(xmatch) = 0.23886 E = 0.2389
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2390
imatch = 2333 xmatch = 46.661 V(xmatch) = 0.23904 E = 0.2390
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2391
imatch = 2334 xmatch = 46.681 V(xmatch) = 0.23922 E = 0.2391
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2393

```

```

imatch = 2335 xmatch = 46.701 V(xmatch) = 0.23940 E = 0.2393
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2394
imatch = 2336 xmatch = 46.721 V(xmatch) = 0.23957 E = 0.2394
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2396
imatch = 2336 xmatch = 46.721 V(xmatch) = 0.23957 E = 0.2396
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2397
imatch = 2337 xmatch = 46.741 V(xmatch) = 0.23975 E = 0.2397
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2399
imatch = 2338 xmatch = 46.761 V(xmatch) = 0.23993 E = 0.2399
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2400
imatch = 2339 xmatch = 46.781 V(xmatch) = 0.24011 E = 0.2400
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2401
imatch = 2340 xmatch = 46.801 V(xmatch) = 0.24029 E = 0.2401
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2403
imatch = 2340 xmatch = 46.801 V(xmatch) = 0.24029 E = 0.2403
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2404
imatch = 2341 xmatch = 46.821 V(xmatch) = 0.24046 E = 0.2404
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2406
imatch = 2342 xmatch = 46.841 V(xmatch) = 0.24064 E = 0.2406
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2407
imatch = 2343 xmatch = 46.861 V(xmatch) = 0.24082 E = 0.2407
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2409
imatch = 2344 xmatch = 46.881 V(xmatch) = 0.24100 E = 0.2409
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2410
imatch = 2345 xmatch = 46.901 V(xmatch) = 0.24118 E = 0.2410
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2411
imatch = 2345 xmatch = 46.901 V(xmatch) = 0.24118 E = 0.2411
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2413
imatch = 2346 xmatch = 46.921 V(xmatch) = 0.24136 E = 0.2413
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2414
imatch = 2347 xmatch = 46.941 V(xmatch) = 0.24154 E = 0.2414
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2416
imatch = 2348 xmatch = 46.961 V(xmatch) = 0.24171 E = 0.2416
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2417
imatch = 2348 xmatch = 46.961 V(xmatch) = 0.24171 E = 0.2417
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2419
imatch = 2349 xmatch = 46.981 V(xmatch) = 0.24189 E = 0.2419
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2420
imatch = 2350 xmatch = 47.001 V(xmatch) = 0.24207 E = 0.2420
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2421
imatch = 2351 xmatch = 47.021 V(xmatch) = 0.24225 E = 0.2421
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2423
imatch = 2352 xmatch = 47.041 V(xmatch) = 0.24243 E = 0.2423
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2424
imatch = 2352 xmatch = 47.041 V(xmatch) = 0.24243 E = 0.2424
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2426
imatch = 2353 xmatch = 47.061 V(xmatch) = 0.24261 E = 0.2426
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2427

```

```

imatch = 2354 xmatch = 47.081 V(xmatch) = 0.24279 E = 0.2427
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2429
imatch = 2355 xmatch = 47.101 V(xmatch) = 0.24297 E = 0.2429
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2430
imatch = 2356 xmatch = 47.121 V(xmatch) = 0.24315 E = 0.2430
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2431
imatch = 2356 xmatch = 47.121 V(xmatch) = 0.24315 E = 0.2431
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2433
imatch = 2357 xmatch = 47.141 V(xmatch) = 0.24333 E = 0.2433
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2434
imatch = 2358 xmatch = 47.161 V(xmatch) = 0.24351 E = 0.2434
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2436
imatch = 2359 xmatch = 47.181 V(xmatch) = 0.24369 E = 0.2436
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2437
imatch = 2360 xmatch = 47.201 V(xmatch) = 0.24387 E = 0.2437
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2439
imatch = 2360 xmatch = 47.201 V(xmatch) = 0.24387 E = 0.2439
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2440
imatch = 2361 xmatch = 47.221 V(xmatch) = 0.24405 E = 0.2440
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2441
imatch = 2362 xmatch = 47.241 V(xmatch) = 0.24423 E = 0.2441
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2443
imatch = 2363 xmatch = 47.261 V(xmatch) = 0.24441 E = 0.2443
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2444
imatch = 2364 xmatch = 47.281 V(xmatch) = 0.24459 E = 0.2444
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2446
imatch = 2364 xmatch = 47.281 V(xmatch) = 0.24459 E = 0.2446
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2447
imatch = 2365 xmatch = 47.301 V(xmatch) = 0.24477 E = 0.2447
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2449
imatch = 2366 xmatch = 47.321 V(xmatch) = 0.24495 E = 0.2449
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2450
imatch = 2367 xmatch = 47.341 V(xmatch) = 0.24513 E = 0.2450
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2451
imatch = 2368 xmatch = 47.361 V(xmatch) = 0.24531 E = 0.2451
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2453
imatch = 2368 xmatch = 47.361 V(xmatch) = 0.24531 E = 0.2453
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2454
imatch = 2369 xmatch = 47.381 V(xmatch) = 0.24549 E = 0.2454
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2456
imatch = 2370 xmatch = 47.401 V(xmatch) = 0.24567 E = 0.2456
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2457
imatch = 2371 xmatch = 47.421 V(xmatch) = 0.24585 E = 0.2457
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2459
imatch = 2372 xmatch = 47.441 V(xmatch) = 0.24603 E = 0.2459
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2460
imatch = 2372 xmatch = 47.441 V(xmatch) = 0.24603 E = 0.2460
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2461

```

```

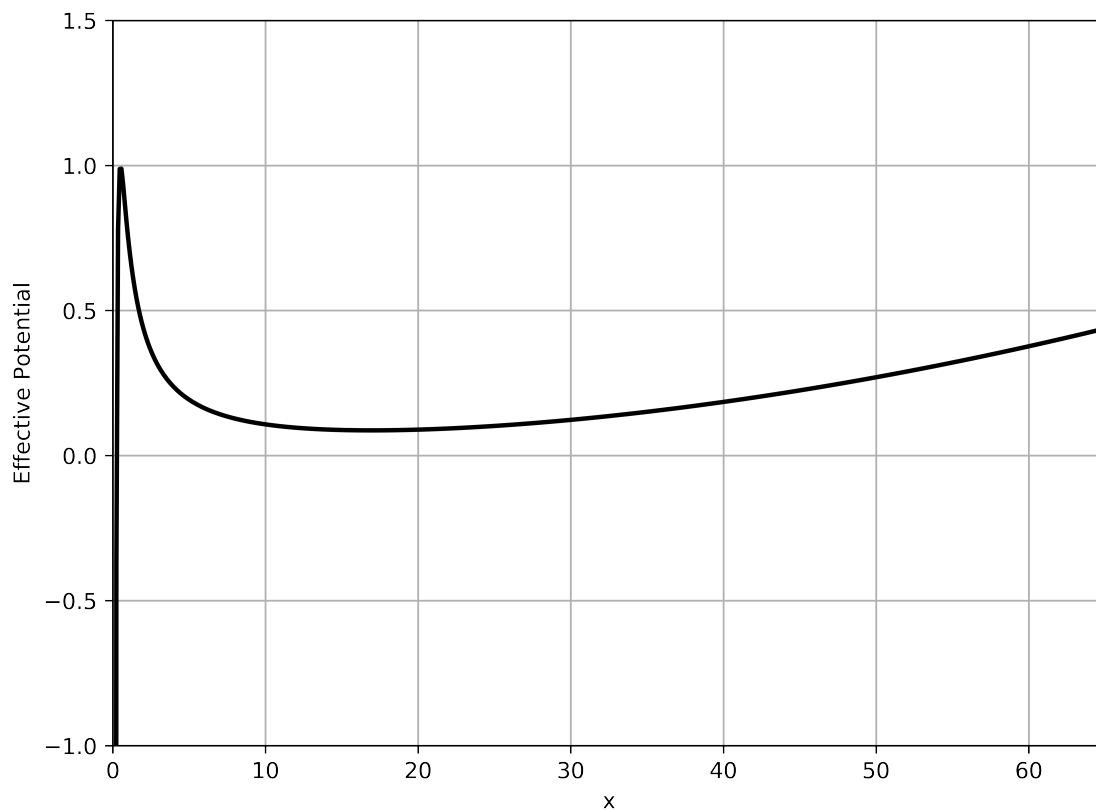
imatch = 2373 xmatch = 47.461 V(xmatch) = 0.24621 E = 0.2461
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2463
imatch = 2374 xmatch = 47.481 V(xmatch) = 0.24639 E = 0.2463
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2464
imatch = 2375 xmatch = 47.501 V(xmatch) = 0.24658 E = 0.2464
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2466
imatch = 2375 xmatch = 47.501 V(xmatch) = 0.24658 E = 0.2466
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2467
imatch = 2376 xmatch = 47.521 V(xmatch) = 0.24676 E = 0.2467
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2469
imatch = 2377 xmatch = 47.541 V(xmatch) = 0.24694 E = 0.2469
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2470
imatch = 2378 xmatch = 47.561 V(xmatch) = 0.24712 E = 0.2470
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2471
imatch = 2379 xmatch = 47.581 V(xmatch) = 0.24730 E = 0.2471
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2473
imatch = 2379 xmatch = 47.581 V(xmatch) = 0.24730 E = 0.2473
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2474
imatch = 2380 xmatch = 47.601 V(xmatch) = 0.24748 E = 0.2474
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2476
imatch = 2381 xmatch = 47.621 V(xmatch) = 0.24766 E = 0.2476
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2477
imatch = 2382 xmatch = 47.641 V(xmatch) = 0.24785 E = 0.2477
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2479
imatch = 2383 xmatch = 47.661 V(xmatch) = 0.24803 E = 0.2479
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2480
imatch = 2383 xmatch = 47.661 V(xmatch) = 0.24803 E = 0.2480
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2481
imatch = 2384 xmatch = 47.681 V(xmatch) = 0.24821 E = 0.2481
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2483
imatch = 2385 xmatch = 47.701 V(xmatch) = 0.24839 E = 0.2483
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2484
imatch = 2386 xmatch = 47.721 V(xmatch) = 0.24857 E = 0.2484
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2486
imatch = 2386 xmatch = 47.721 V(xmatch) = 0.24857 E = 0.2486
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2487
imatch = 2387 xmatch = 47.741 V(xmatch) = 0.24876 E = 0.2487
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2489
imatch = 2388 xmatch = 47.761 V(xmatch) = 0.24894 E = 0.2489
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2490
imatch = 2389 xmatch = 47.781 V(xmatch) = 0.24912 E = 0.2490
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2491
imatch = 2390 xmatch = 47.801 V(xmatch) = 0.24930 E = 0.2491
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2493
imatch = 2390 xmatch = 47.801 V(xmatch) = 0.24930 E = 0.2493
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2494
imatch = 2391 xmatch = 47.821 V(xmatch) = 0.24949 E = 0.2494
imatch = 14 xmatch = 0.281 V(xmatch) = 0.39261 E = 0.2496

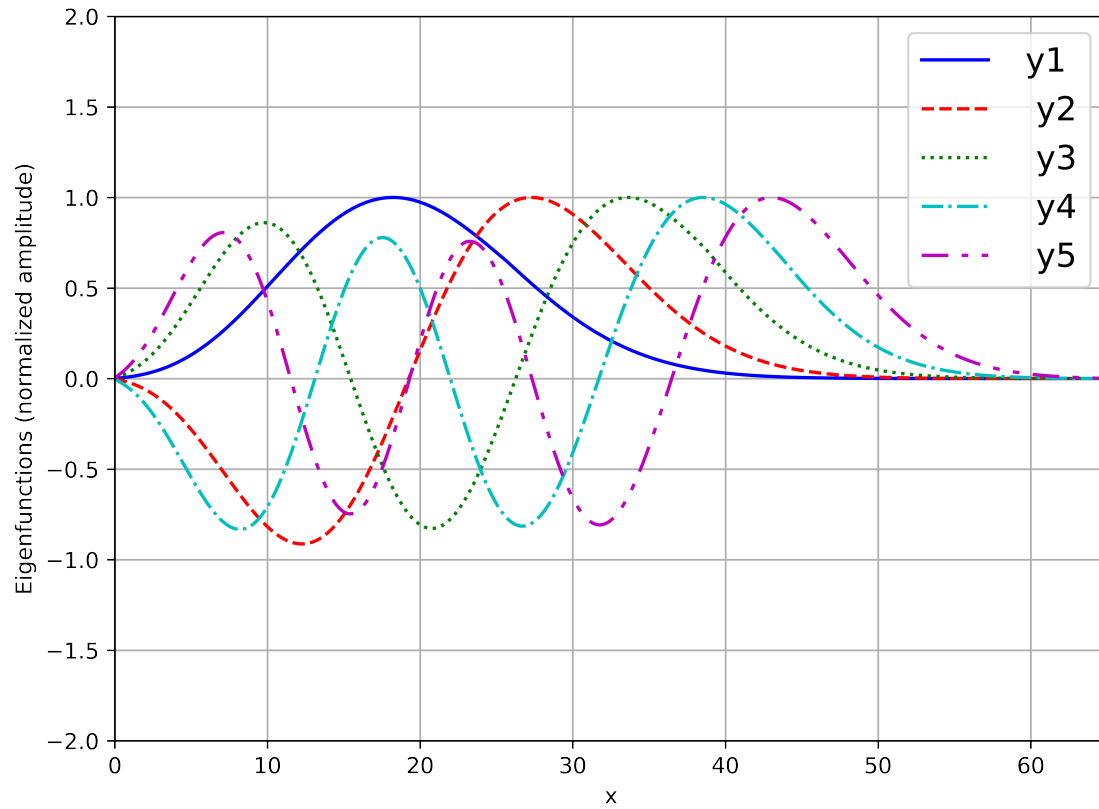
```

```

imatch = 2392  xmatch = 47.841  V(xmatch) = 0.24967  E = 0.2496
imatch = 14   xmatch = 0.281   V(xmatch) = 0.39261  E = 0.2497
imatch = 2393  xmatch = 47.861  V(xmatch) = 0.24985  E = 0.2497
imatch = 14   xmatch = 0.281   V(xmatch) = 0.39261  E = 0.2499
imatch = 2394  xmatch = 47.881  V(xmatch) = 0.25004  E = 0.2499
imatch = 14   xmatch = 0.281   V(xmatch) = 0.39261  E = 0.2500
imatch = 2394  xmatch = 47.881  V(xmatch) = 0.25004  E = 0.2500
imatch = 14   xmatch = 0.281   V(xmatch) = 0.39261  E = 0.2501
imatch = 2395  xmatch = 47.901  V(xmatch) = 0.25022  E = 0.2501
imatch = 14   xmatch = 0.281   V(xmatch) = 0.39261  E = 0.2503
imatch = 2396  xmatch = 47.921  V(xmatch) = 0.25040  E = 0.2503
imatch = 14   xmatch = 0.281   V(xmatch) = 0.39261  E = 0.2504
imatch = 2397  xmatch = 47.941  V(xmatch) = 0.25058  E = 0.2504
imatch = 14   xmatch = 0.281   V(xmatch) = 0.39261  E = 0.2506
imatch = 2397  xmatch = 47.941  V(xmatch) = 0.25058  E = 0.2506
imatch = 14   xmatch = 0.281   V(xmatch) = 0.39261  E = 0.2507
imatch = 2398  xmatch = 47.961  V(xmatch) = 0.25077  E = 0.2507
k = 4   E_old = 0.251   Eingen = 4.000   f_old = 9.114e-01   f = 9.114e-01
delta_E = 8.758e-05

```





```

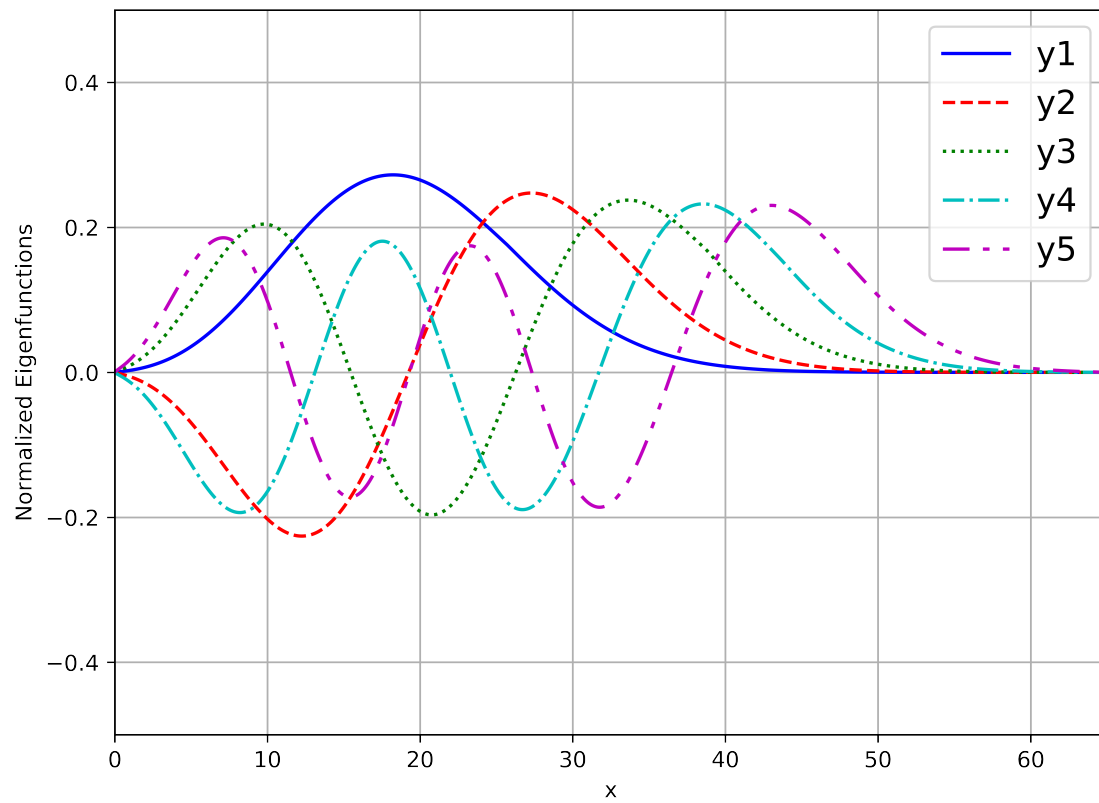
probability normalization
efic1 = 0.207    I1 = 13.468    eI1 = 0.263
efic2 = 0.251    I2 = 16.335    eI2 = 0.282
efic3 = 0.273    I3 = 17.713    eI3 = 0.289
efic4 = 0.285    I4 = 18.512    eI4 = 0.293
efic5 = 0.290    I5 = 18.843    eI5 = 0.295

```

```

checking probability
efic1 = 0.210    I1 = 1.013    eI1 = 0.020
efic2 = 0.257    I2 = 1.022    eI2 = 0.017
efic3 = 0.276    I3 = 1.012    eI3 = 0.016
efic4 = 0.287    I4 = 1.008    eI4 = 0.016
efic5 = 0.298    I5 = 1.028    eI5 = 0.016

```



[]: