

```

kB=1.38064852e-28 #Boltzmann constan (JK)
thetaD=428
rho=6.022e28 #density m**-3
a=[]
b=[]

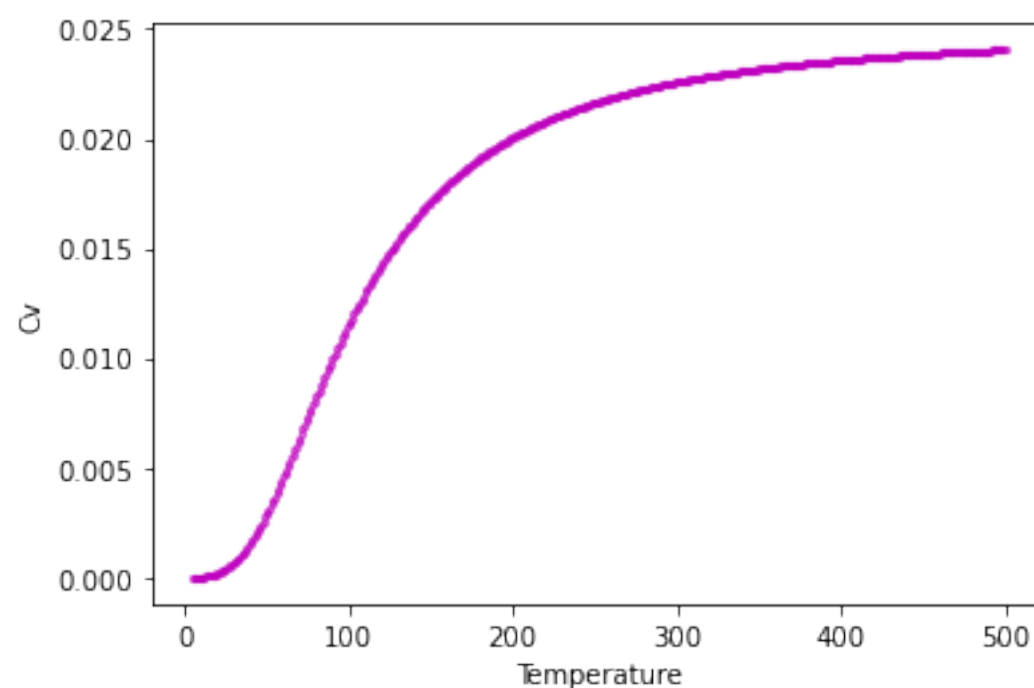
def Cv(T):
    def f(x):
        return (x**4)*(np.exp(x))/(((np.exp(x)-1)**2))
    N=1000
    a=0
    b=(thetaD/T)
    h=(b-a)/N
    s= 0.5 *f(b)
    for k in range (1,N):
        s+=f(a+k*h)

    return (9*V*rho*kB*((T/thetaD)**3)*h*s)
for T in range(5,501):
    a.append(T)
    b.append(Cv(T))

from matplotlib import pyplot as plt
fig=plt.figure()
ax=fig.add_subplot(111)
ax.scatter(a,b,s=5,c='m',alpha=0.5)
ax.set_xlabel("Temperature")
ax.set_ylabel("Cv")

```

Out[3]: Text(0, 0.5, 'Cv')



In []: