Acceleration

```
def alt_acceleration0(mass, pos, eps2):
    n = len(mass)
    acc = np.zeros((n,3))
    for i in range(n):
        for j in range(n):
            if j != i:
                dr2 = eps2
                for k in range(3):
                    dr2 += (pos[j,k]-pos[i,k])**2
                dr2i = 1./dr2
                dr3i = dr2i*math.sqrt(dr2i)
                for k in range(3):
                    dxij = (pos[j,k]-pos[i,k])*dr3i
                    acc[i,k] += mass[j]*dxij
    return acc
```

Acceleration

```
def alt_acceleration(mass, pos, eps2):
    n = len(mass)
    acc = np.zeros((n,3))
    for i in range(n):
        for j in range(i+1,n):
            dr2 = eps2
            for k in range(3):
                dr2 += (pos[j,k]-pos[i,k])**2
            dr2i = 1./dr2
            dr3i = dr2i*math.sqrt(dr2i)
            for k in range(3):
                dxij = (pos[j,k]-pos[i,k])*dr3i
                acc[i,k] += mass[j]*dxij
                acc[j,k] -= mass[i]*dxij
    return acc
```

Acceleration

```
def acceleration(mass, pos, eps2):
    n = len(mass)
    acc = np.zeros((n,3))
    for i in range(n):
        dx   = pos - pos[i]
        dr2  = (dx**2).sum(axis=1) + eps2
        dr2i = 1./dr2
        dr3i = mass*np.sqrt(dr2i)*dr2i
        dx  *= dr3i.reshape(n,1)
        acc[i] = dx.sum(axis=0)
    return acc
```