14 Sample inputs for Dens

14.1 Orbit labels for Dens

```
 k n l  j

 1 1 s 1/2 [1]
 2 1 p 3/2

 3 1 p 1/2 [2]
 4 1 d 5/2
 5 1 d 3/2

 6 2 s 1/2 [3]
 7 1 f 7/2
 8 1 f 5/2
 9 2 p 3/2
10 2 p 1/2 [4]

11 1 g 9/2
12 1 g 7/2
13 2 d 5/2
14 2 d 3/2
15 3 s 1/2 [5]

16 1 h 11/2
17 1 h 9/2
18 2 f 7/2
19 2 f 5/2
20 3 p 3/2
21 3 p 1/2 [6]

22 1 i 13/2
23 1 i 11/2
24 2 g 9/2
25 2 g 7/2
26 3 d 5/2
27 3 d 3/2
28 4 s 1/2 [7]

29 1 j 15/2[8]
```

14.2 Ground state densities

To obtain the ground state density for ^{208}Pb with the SKX Skyrme hamiltonian:

```
dens
fn       - change filenane for outoput (default=dens.dao)
pb208      filename
az       - to input A and Z values
208,82     the A and Z values
cp       - to setup the potential model (change potential)
sk20       the Skx Skyrme interaction
gd       - do the calculation for the Ground state Density
st       - stop
```

To find all of the potential model available type h after cp. In this list you will see that sk20 corresponds to Skx.

14.3 B(EL) and B(ML) values

To calculate the B(M1) in ^{20}Ne between the first 2^+ state and the second 2^+ state

```
dens
az            - to input A and Z values
20,10         - the A and Z values
mh            - start the calculation for oscillator B value
M1,10         - 10 indicates the how the obd will be read
2.,2.         - J_i, J_f, T_i, T_f (if different from the defaults)
1,2,1,1,16,b4004w400 - n_i, n_f, p_i, p_f, A_c, name of OBD file
st            - stop
```

The n_i and the n_f is the state number, -n will loop from 1, to n. When n=-999 the loop if from 1 to all states in the obd file. p_i and p_f are the parities, 1 for + and -1 for -. A_c is the mass of core for the model space (^{16}O in this case).

To calculate the B(E2) in ^{20}Ne between the first 0^+ state (ground state) and the first 2^+ using the default oscillator value of $\hbar\omega = 45\mathrm{A}^{-1/3}\text{-}25\mathrm{A}^{-2/3}$:

```
dens
az
20,10
mh       - start the calculation for oscillator B value
```