bins calculates scattering states for a specified core and valence particle system moving a chosen potential. The program then forms a contunuum bin by integration over a specified energy range using a choice of one of the two available weight functions. The bin wave function is output in two formats, as was done in bound, (bin.xxx with (r,u(r)) and bind.xxx with u(r)/r) together with the phase shift over the range of the bin energies (to phases.xxx).

data input looks like:

```
xxx
10.0    1.0
2  0.0  2.0
40.    0.0
1.25   0.7
1001    0.1
1.0  2.0  60
1
```

Inputs are: (the valence particle is assumed neutral)

* trailer for files with bin wave function (bin.xxx and bind.xxx) and for phases file (phases.xxx)
* core and fragment masses
* orbital, spin and total angular momenta
* Woods-Saxon potential depths (cent and ls)
* Woods-Saxon potential radius and diffuseness
* number of radial integration steps and step length
* minimum and maximum relative energy and # k points
* weight function g(k) in bin state construction
  1 = unity 2 = sin(delta)