scatter.f takes data from a file scatter.xxx with the
format below. The trailer xxx is prompted when run. There
is no spin-orbit interaction included here. Output is:

```
phases.xxx    phase shifts in degrees (real V_N): Ecm delta
potent.xxx    the potential V_N(r): r  Re.V_N  Im.V_N  V_C
smatrix.xxx   partial wave S-matrix elements: ell Re.S Im.S |S|
tmatrix.xxx   partial wave T-matrix elements: ell Re.T Im.T
wavefun.xxx   radial wavefunctions: r  Re.u   Im.u
sigmas.xxx    partial cross sections vs Ecm  sigma (fm**2)
```

```
%-----------------------------------------------
 1   0
40  20
 0   8
101
3  3
42.   1.25   0.65
0.0   1.00   0.65
0.0   1.00   0.65
```

Data set requires (free format input)

```
%-----------------------------------------------
* projectile:                 mass   charge
* target:                     mass   charge
* centre of mass energies:    e_min       e_max
* number of energies:         nener
* partial waves:              l_min       l_max
* Real Woods-Saxon (volume)   V_0   r_0   a_0
* Imag Woods-Saxon (volume)   W_v   r_v   a_v
* Imag Woods-Saxon (surface)  W_s   r_s   a_s
%-----------------------------------------------
```