Worksheet #11
Friday, May 3, 2024

Name

Questions (5 pts):

Consider helium atom.

The variational method with a trial wavefunction similar to that for the ground state of hydrogenic systems, but with an effective nucleus charge Z_e instead of Z yielded the following average energy (in a.u.):

$E = Z_e^2 - 2ZZ_e + (5/8) Z_e$

1) Find the effective charge Z_e which minimizes energy.

2) Write down the energy predicted by the variational method using the value of Z_e you found in 1) in a.u.