**The electron-electron repulsion potential**

*Write*[*electron-electron repulsion potential*](https://www.dsedu.org/courses/dft/vee)*for H-like atom using spherical symmetry.*

*Tips: use Poisson equation for charge density with boundary conditions.*

The electron-electron repulsion potential has a form



The potential satisfies the Poisson equation



In the case of spherical symmetry we can write



or



where  is the radial wave function.

We can solve equation on a range , where *r*0is a very small number and *rf* is sufficiently big number.

For a very big value of *r* the potential is satisfy the equation



where  is the charge of the electron.

For the point *r* = 0 we can calculate the value of with the help of and use exact analytical solution for H-like atom



Using and we can write the boundary conditions for function 



If we know the wave function , then we can calculate *e-e* potential by solving differential equation with boundary conditions .