Density Functional Calculations for Atoms in very Strong Magnetic Fields

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In this contribution the results of density functional calculations for multi electron atoms such as helium , carbon and neon in extremely strong magnetic fields of the order of $10^9 \rightarrow 10^{13}$ Tesla , such as they exist on neutron stars, are presented. We show the results obtained for eigenergies using three different functionals. By comparing the energies for helium with those obtained using the Hartree Fock method we establish which functional is most suitable for calculating atomic data via this method. We also present preliminary results for matrix elements of dipole transition in helium and carbon. Some ideas for improving the accuracy of these calculations are also discussed.