Abstract

Following the laser ablation studies leading to a theory of nuclei confinement by aDebye layer mechanism, we present here numerical
evaluations for the known stable nuclei wherethe Coulomb repulsion is included as a rather minor component especially for lager nuclei. It is noticed that the well known empirical nuclear density of 2 times ten to power 38 follows for a nucleon number A< 60 for iron. The crucial change of the Fermi energy into the relativistic branch for thenucleons results for a density at 3 times ten to power 39 which density corresponds to the Debye layer equilibrium near uranium above which the Fermi energy will not permit any nucleation. It is speculated whether the range between both
densities at the big bang expansion at temperatures of few 100 keV and at 200 seconds after the big bang is resulting in a nuclear-chemical Boltzmann equilibrium for the generation of the endothermic nuclear generation. The question is then open,what additional nuclear expansion forces are acting in the elements between uranium and iron during this equilibrium reactions
in nuclei such that the empirical nuclear density is produced.