

**Abstract for GR-TR Conference on Statistical Mechanics
and Dynamical Systems**

Plenary Invited

Invited Talk

A Short Journey to the Structures of Matter

E. N. Economou*

Institute of Electronic Structure and Laser, Foundation for Research and
Technology-Hellas, P.O. Box 1527, 71110 Heraklion, Greece

* Electronic Address: economou@admin.forth.gr

Confinement by attractive forces implies the appearance of a minimum quantum kinetic energy which is increasing as the confinement becomes stronger and thus counterbalances the pressure of the attractive forces and leads to the equilibrium structures of the Cosmos from the protons and neutrons to the neutron stars and beyond. This basic idea coupled with dimensional analysis provides semiquantitative results for atoms, molecules, condensed matter, planets, etc. Some examples of these results will be presented in my talk and possibly during the question period depending on the interest of the audience [1].

[1] E. N. Economou, *A Short Journey from Quarks to the Universe*, Springer, Heidelberg, 2011