

6th Richard F.W. Bader Memorial Lecture

13th June, 2017, at 17.00, Collin Chapman Room, Woodbury Park, Exeter, UK



Atoms and Molecules in Mirce-mechanics

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As all physical phenomena associated with the functionality of maintainable system are characterised by certainty, reversibility and independence of time, location and human influences, their functionality performance can be accurately predicted by making use of well understood laws of natural sciences, such as: Newton's laws of motion, Maxwell's law of electrodynamics, Coulomb's law of solid friction, Boltzmann's law of thermodynamics, Hook's law of stress and strength, to name a few. However, the information regarding functionability performance of a maintainable system is almost non-existent at the beginning of in-service life. The reason being, all associated functionability phenomena are dominated by complex interactions between their consisting parts on one hand and their interactions with natural environment and human actions, on the other. These interactions are characterised by uncertainty, discontinuity, irreversibility, inseparability, and are dependent on time, location and human influences. As the laws of natural sciences cannot be used to predict functionability performance of maintainable systems, the author has developed Mirce-mechanics.

As maintainable systems are composed of atoms, their functionability performance is governed by the properties of atoms and their bondings into molecules. The manner, in which the negative charge of an atom or a molecule is arranged in three-dimensional space, is governed by the electronic charge density distribution, which determines directly the sizes and shapes of molecules and all of their chemical and physical properties. The main objective of the Lecture is to present author's vision of using Professor Bader's Quantum Theory of Atoms in Molecules as foundation for the scientific understanding of the physical mechanisms that generate occurrences of positive and negative functionability events to predict expected functionability performance of a given maintainable system type, rather than "keep fingers cross" that, several decades later, summary statistics will be satisfactory!

Admission Free, all welcome, R.S.V.P. by 9th June

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