QM-01 Dialogues Session*
Review of Classical Concepts

A. K. Kapoor
email:akkhcu@gmail.com

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Question: *What is a point particle?*

(i) A point particle is a 'model' in physics that we use to describe a real body in theoretical framework. In this sense, a planet is treated like a point particle when we describe its motion around the Sun in an elliptic orbits. We do it all the time.

(ii) Classically a point particle is fully described by its position and momentum.

Question: *What is the difference between force and interaction?*

(i) Force is the concept that comes in Newton's second law. Sum of all forces determines the acceleration of a body on which acts.

(ii) Interactions of bodies means how a body is affected by other bodies in a system and by presence of external bodies and environment. Interaction is a general term and and can be specified in many ways.

(iii) As an example, for a hydrogen atom, placed in electric field, the interactions that affect this system are electrostatic force between the electron and proton, and the force due to the electric field on the electron and the proton.

(iv) Telling all forces acting on bodies in a system is one way of specifying the interactions. Other mathematical quantities that tell us the interactions are (i) potential energy, (ii) Lagrangian (iii) (iv) Hamiltonian, (v) even the equations of motion.

(v) Complete specification of interactions makes it possible for us to set up equations of motion and to study how system changes with time.

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Space for your notes, comments, questions etc