University of Mumbai & Department of Atomic Energy
CENTRE FOR EXCELLENCE IN BASIC SCIENCES
Health Centre, University of Mumbai, Kalina Campus, Mumbai 400098

COLLOQUIUM

"Quantum Physics meets Biology: Case of Avian Magnetoreception"

Abstract: In 1944, Erwin Schrodinger wrote a very influential book with title "What is life?" In this book he anticipated a molecular basis for the heredity of all living beings. Later this was confirmed by the discovery of double-helix structure of DNA by Watson and Crick in 1953. This discovery eventually led to the beginning of "Molecular Biology". Exactly 10 years later Per-Olov Lowdin, a Swedish physicist, identified proton tunneling in DNA as a probable mechanism responsible for the mutation, and in that very article he first time coined the term sub-molecular biology or "Quantum Biology" as a new interdisciplinary field. Later this subject did not flourish much. Very recently, scientists have started showing lot of interests in understanding some bilogical processes from the quantum mechanical point of view. It is now believed that quantum mechanical processes play very crucial role at the functional level of many biological processes. For example, photosynthesis, DNA damage, enzymic reaction, olfaction process, avian magnetoreception, etc. In this talk, we will discuss the role of quantum physics in some of these biological processes. Our major concentration will be on avian magnetoreception process. i.e. how migratory birds sense geomagnetic field and fly from one continent to another. We will discuss how nature very cleverly optimizes quantum coherence and environmental noise to make the avian compass very efficient. Finally, we will discuss about some possible future directions.

By

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Day & Date : **Tuesday, February 19, 2013**

Time : **15:45 hrs**

Venue : **Seminar Room, PF-AG-14, Prefabs, Near Annabhau Sathe Bhavan University of Mumbai, Vidyanagari, Kalina Campus, Mumbai - 400 098**

All are Welcome