

Measurement of time is of fundamental importance in physics and the whole of science. It is carried using a clock. A clock is identified with a dynamical system. Traditionally, time is taken to be a variable taking values in the real line  $\mathbb{R}$ , and the corresponding dynamical system thus measures time identified as a real variable. Recently formulated calculus on fractals allows one to deal with fractal-time dynamical systems. In these systems time evolution takes place on certain classes of fractals. More specifically these classes involve fractal subsets of the real line and fractal curves. Clocks using them would thus measure the values taken by a fractal variable, for time. The question naturally arises whether such clocks are equivalent to ordinary clocks.

The calculus on fractals is conjugate to the ordinary calculus on the real line. The conjugacy thus allows one to identify a bigger equivalence class of clocks. This manifestation of a tautology offers possibility of alternative viewpoints.

Tuesday COLLOQUIUM

Equivalence of Clocks  
by Dr. Anil Gangal, IISER, Pune



Tuesday, 25 January 2011  
4.30 p.m.

Seminar Room, Prefabs  
Near Annabhau Sathe Bhavan  
University of Mumbai  
Vidyanagari Campus, Kalina



Prof. Anil Gangal obtained his Masters from Pune University and Ph.D. from TIFR. He has also been

associated with University of Kaiserslautern, Germany and Pune University. After retirement, he is now a Visiting Faculty at IISER, Pune. He has taught various basic subjects including Mathematical Methods, Nuclear Physics, Classical Mechanics, Quantum Mechanics, Statistical Physics, Nonlinear Dynamics, Quantum Field Theory – to mention a few.

The University of Pune bestowed on him the V.K. Joag award for teachers in 1999.

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