

Physics of Chaos: From Non-Physicists to Physicists

KK CHAND^a and MK DAS^b

^aEx-Scientist, PXE, Chandipur, Balasore.

Adjunct Professor, FM University(APAB), Balasore.

e-mail: kkchandpxe@hotmail.com (corresponding author)

^bSenior Lecturer in Physics, BJB College, Bhubaneswar. ^be-mail:
mihir1966das@gmail.com

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“Chaos was the law of nature : Order was the dream of man”

Henry Adams Abstract.

We live in a dynamic world, often described as “unpredictable” and “chaotic”. The word “Chaos” come to mind is confusion, disorder, and lack of control. It is the common phenomenon in non-linear science, and special motion of non-linear systems. From human perspective point of view, we do not visualize the greater framework of the system within its boundaries. Chaos is an intrinsically richness related to its structure with their wide range of potential behaviours. In view of the above, the paper discusses various aspects: (a) the basics of chaos (physics) and presents mainly the importance of the nonlinearities nature in the physical systems. Finally, we will discuss for an example of Lorenz Equations (LE) chaotic system. We use a MATLAB computer program to simulate the behaviour of the LE and observe how it is sensitive to initial conditions with graphical aspects (phase planes and trajectory profiles) as a case study.

Keywords: Chaos, system, simple pendulum, state spaces and trajectories.