# ON MINIMAL DYNAMICAL SYSTEMS

**RUCHI DAS**

Department of Mathematics, Faculty of Science, The Maharaja Sayajirao University of Baroda, Vadodara, India

**Abstract:** Minimal dynamical systems, defined by G. D. Birkhoff in 1912, are analogues of ergodic measures in topological dynamics and can be considered to be the most fundamental dynamical systems.

A dynamical system $(X, f)$ is called minimal if $X$ does not contain any non-empty, proper, closed $f$-invariant subset. In such a case we also say that the map $f$ itself is minimal. We shall study topological structure of minimal sets, topological properties of minimal maps, some interesting examples of minimal homeomorphisms and minimal non-invertible maps.

The classification, i.e., the full topological characterization of compact metric spaces admitting minimal maps is a well-known open problem in topological dynamics, solved only in few particular cases, e.g., for the class of 2-manifolds and for the class of almost totally disconnected compact metric spaces. We shall discuss in general continuums admitting/not admitting minimal maps. We shall see relations between different notions of chaos for minimal dynamical systems and finally discuss minimality and topological transformation groups.