MINIMAL SETS. DYNAMICAL TOPOLOGY. RIGID SPACES IN TOPOLOGICAL DYNAMICS

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Abstract. (1) We discuss the problem of characterizing spaces admitting/not admitting minimal maps (so called *minimal/non-minimal spaces*). We survey some known examples of minimal/non-minimal spaces and some related theorems. We also discuss the problem of finding a full topological characterization of *minimal sets* in a given space. Such a characterization is known only in some zero and one-dimensional spaces but we present also some partial descriptions of minimals sets in some other cases.

(2) By *Dynamical Topology* we mean the area on the boundary between Dynamical Systems and Topology (but closer to Dynamical Systems, because most of the tools that can be used there are from dynamics) which investigates topological properties of spaces of maps that can be described in dynamical terms. As an example of what we mean by this, we discuss some topological properties of the spaces of all transitive maps, all piecewise monotone transitive maps and all piecewise linear transitive maps on the interval. These spaces are considered with the uniform metric.

(3) A nondegenerate space X is *rigid* if every continuous map $X \to X$ is either the identity or a constant map. A *Cook continuum* $\mathcal{C}$ is a nondegenerate metric continuum such that, for every subcontinuum K and every continuous map $f : K \to \mathcal{C}$, either f is constant or $f(x) = x$ for all $x \in K$. Rigid spaces have been used in dynamics either in a trivial way or as an inspiration for constructing spaces which are 'rigid-like' with respect to some dynamical property. One can hardly imagine that they could be really useful in topological dynamics, say for the purpose of constructing spaces admitting an interesting nontrivial dynamics. We will controvert this by showing the idea how Cook continua can be used to construct one-dimensional continua with prescribed sets of values of supremum topological sequence entropy.

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