Abstract: As is well-known, a continuous image of a separable and completely metrizable space is called in Topology as analytic set or analytic space. The following theorems are basic:

Baire-Alexandroff Theorem (1929): A topological space $X$ is homeomorphic to $\mathbb{P}$ iff $X$ is a separable, 0-dimensional and metrizable space which is an absolute $G_δ$ having no compact open subset.

Hausdorff Theorem (1932): A metric space is an analytic set iff it is a continuous image of $\mathbb{P}$.

In the above setting, $\mathbb{P}$ denotes the irrationals with the standard subspace topology obtained from $\mathbb{R}^1$. We will give a detailed proof in this talk of the following well-known theorem of Ernest Michael and Arthur H. Stone from 1969:

The Main Theorem: Every analytic set is actually an image of $\mathbb{P}$ under a quotient mapping.