Arhangel’skii, A. V.
On nowhere locally compact spaces with connected Stone-Čech remainder. (English)

This paper provides sufficient conditions for when a Tychonoff, nowhere locally compact space $X$ has the property that the remainder, $\beta X \setminus X$, is connected. A space $X$ is Moscow if every regular closed subset is the union of $G_\delta$ sets. The products of first countable Tychonoff spaces, countable pseudocompact spaces, and extremally disconnected spaces, are each Moscow. Theorem: If $X$ is Tychonoff, connected, Moscow, and every compact $G_\delta$ subspace is empty, then $\beta X \setminus X$ is connected.

A topological group $G$ is $C^*$-incomplete if there is a topological group $G^*$ such that $G$ is a dense, proper subgroup of $G^*$ and $G^*$ is a subspace of $\beta G$. Theorem: If $G$ is a connected topological group that is $C^*$-incomplete, then $\beta G \setminus G$ is connected. The paper concludes with interesting results about when the remainder of the Wallman compactification of a $T_1$ space $X$ is disconnected.

Reviewer: Jack R. Porter (Lawrence)

MSC:
54A25  Cardinality properties (cardinal functions and inequalities, discrete subsets)
54B05  Subspaces in general topology

Keywords:
connected space; remainder; Stone-Čech remainder; compactification; Wallman remainder; nowhere locally compact; Moscow space; topological group; Rajkov completion

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References:

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