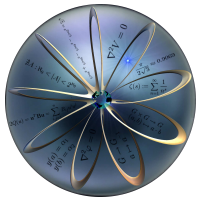

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countable complement topology

Canonical name	CountableComplementTopology
Date of creation	2013-03-22 14:37:56
Last modified on	2013-03-22 14:37:56
Owner	mathcam (2727)
Last modified by	mathcam (2727)
Numerical id	5
Author	mathcam (2727)
Entry type	Definition
Classification	msc 54A05
Synonym	cocountable topology

Let X be an infinite set. We define the *countable complement topology* on X by declaring the empty set to be open, and a non-empty subset $U \subset X$ to be open if $X \backslash U$ is countable.

If X is countable, then the countable complement topology is just the discrete topology, as the complement of *any* set is countable and thus open.

Though defined similarly to the finite complement topology, the countable complement topology lacks many of the strong compactness properties of the finite complement topology. For example, the countable complement topology on an uncountable set gives an example of a topological space that is not weakly countably compact (but *is* pseudocompact).