totally bounded

Canonical name	TotallyBounded
Date of creation	2013-03-22 13:09:54
Last modified on	2013-03-22 13:09:54
Owner	Mathprof (13753)
Last modified by	Mathprof (13753)
Numerical id	12
Author	Mathprof (13753)
Entry type	Definition
Classification	msc 54E35
Related topic	MetricSpace
Related topic	Bounded
Related topic	Subset

Let A be a subset of a topological vector space X.

A is called *totally bounded* if , for each neighborhood G of 0, there exists a finite subset S of A with A contained in the sumset $S + G$.

The definition can be restated in the following form when X is a metric space:

A set $A \subseteq X$ is said to be *totally bounded* if for every $\epsilon > 0$, there exists a finite subset $\{s_1, s_2, \ldots, s_n\}$ of A such that $A \subseteq \bigcup_{k=1}^{n} B(s_k, \epsilon)$, where $B(s_k, \epsilon)$ denotes the open ball around s_k with radius ϵ.

References

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[2] A. Wilansky, *Functional Analysis*, Blaisdell Publishing Co., 1964

[3] W. Rudin, *Functional Analysis*, 2nd ed. McGraw-Hill , 1973