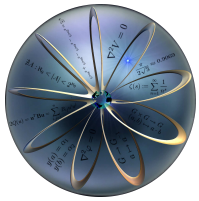

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filter basis

Canonical name	FilterBasis
Date of creation	2013-03-22 14:41:34
Last modified on	2013-03-22 14:41:34
Owner	rspuzio (6075)
Last modified by	rspuzio (6075)
Numerical id	11
Author	rspuzio (6075)
Entry type	Definition
Classification	msc 03E99
Classification	msc 54A99
Synonym	filter base
Defines	filter subbasis
Defines	equivalent

A *filter subbasis* for a set S is a collection of subsets of S which has the finite intersection property.

A *filter basis* B for a set S is a non-empty collection of subsets of S which does not contain the empty set such that, for every $u \in B$ and every $v \in B$, there exists a $w \in B$ such that $w \subset u \cap v$.

Given a filter basis B for a set S, the set of all supersets of elements of B forms a filter on the set S. This filter is known as the filter generated by the basis.

Given a filter subbasis B for a set S, the set of all supersets of finite intersections of elements of B is a filter. This filter is known as the filter generated by the subbasis.

Two filter bases are said to be *equivalent* if they generate the same filter. Likewise, two filter subbases are said to be equivalent if they generate the same filter.

Note: Not every author requires that filters do not contain the empty set. Because every filter is a filter basis then accordingly some authors allow that a filter base can contain the empty set.