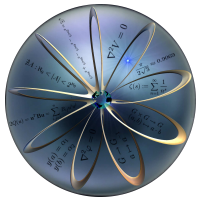

planetmath.org

Math for the people, by the people.

conductor of a vector

Canonical name	ConductorOfAVector
Date of creation	2013-03-22 14:05:19
Last modified on	2013-03-22 14:05:19
Owner	CWoo (3771)
Last modified by	CWoo (3771)
Numerical id	5
Author	CWoo (3771)
Entry type	Definition
Classification	msc 15A04
Synonym	T-conductor
Synonym	conductor
Synonym	annihilator
Synonym	annihilator polynomial
Synonym	conductor polynomial

Let k be a field, V a vector space, $T : V \to V$ a linear transformation, and W a T-invariant subspace of V. Let $x \in V$. The *T-conductor of x in W* is the set $S_T(x, W)$ containing all polynomials $g \in k[X]$ such that $g(T)x \in W$. It happens to be that this set is an ideal of the polynomial ring. We also use the term T-conductor of x in W to refer to the generator of such ideal.

In the special case $W = \{0\}$, the T-conductor is called *T-annihilator* of x. Another way to define the T-conductor of x in W is by saying that it is a monic polynomial p of lowest degree such that $p(T)x \in W$. Of course this polynomial happens to be unique. So the T-annihilator of x is the monic polynomial m_x of lowest degree such that $m_x(T)x = 0$.