The $\phi$-derivations

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Abstract

We generalize the derivations with help of homomorphisms

1 The derivations

Let be given an algebra $A$, a derivation is an application such that:

$$X(ab) = X(a)b + aX(b)$$

2 The $\phi$-derivations

Let be given an algebra $A$ with an homomorphism $\phi$, a $\phi$-derivation is an application such that:

$$X(ab) = X(a)\phi(b) + \phi(a)X(b)$$

3 Properties

The definition makes sense because $X(ab.c) = X(a.bc)$ ($\phi$ is an homomorphism). If $\phi$ is an isomorphism, the $\phi$-derivations are reduced to derivations. It is a vector space but we have no Lie brackets.

4 Bibliography