Derimorphisms over rings and Singer-Wermer-Thomas theorem for cleft algebras

Your name

Shanghai Jiao Tong University & University of Stuttgart, P.R.China, Germany
zyh@sjtu.edu.cn

Session: Group Rings and Related Topics

A derimorphism over a ring is a mixture of a derivation and a homomorphism. A level $\lambda = (\lambda_1, \lambda_2, \lambda_3)$ derimorphism D over a ring R is an additive mapping over R such that $D(xy) = D(x)y + xD(y) - \lambda D(x)D(y)$ for some central element $\lambda \in Cen(R)^3$, where $Cen(R)$ is the center of R. The usual derivation is just a derimorphism of level $(1, 1, 0)$ while the backward (respectively forward) h-difference a derimorphism of level (1, 1, 1) (respectively $(1, 1, -1)$). A general theory of derimorphisms over a ring with identity is developed in this paper, in particular, a Singer-Wermer-Thomas type theorem, that is, the range of a derivation over a commutative Banach algebra is contained in the radical, is proved for elementary algebras (possibly infinite dimensional).