

## CHARACTERIZATION OF HIGHER DERIVATIONS ON REFLEXIVE ALGEBRAS

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*Abstract.* Let  $\text{Alg } \mathcal{L}$  be a CSL algebra. We say that a family of linear maps  $D = \{D_n, D_n : \text{Alg } \mathcal{L} \rightarrow \text{Alg } \mathcal{L}, n \in \mathbb{N}\}$  is higher derivable at  $\Omega \in \text{Alg } \mathcal{L}$  if  $D_n(AB) = \sum_{i+j=n} D_i(A)D_j(B)$  for any  $A, B \in \text{Alg } \mathcal{L}$  with  $AB = \Omega$ . In this paper, we give a necessary and sufficient condition for a family of linear maps  $D = \{D_n, D_n : \text{Alg } \mathcal{L} \rightarrow \text{Alg } \mathcal{L}, n \in \mathbb{N}\}$  being higher derivable at  $\Omega$  which satisfies one of the following properties: (1)  $\Omega = 0$ ; (2)  $\Omega$  is a left (or right) separating point of  $\text{Alg } \mathcal{L}$ ; (3)  $\Omega = P\Omega = \Omega P$  for some nontrivial projection  $P \in \mathcal{L}$  and  $P\Omega P$  is a left (or right) separating point of  $P\text{Alg } \mathcal{L}P$ . In particular, if  $\text{Alg } \mathcal{L}$  is an irreducible CDCSL algebra or a nest algebra, then  $D = \{D_n, D_n : \text{Alg } \mathcal{L} \rightarrow \text{Alg } \mathcal{L}, n \in \mathbb{N}\}$  is higher derivable at such  $\Omega$  if and only if it is a higher derivation.

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